CONSTRAINTS, RESTRAINTS, AND THE ROLE OF AEROSPACE POWER IN THE 21ST CENTURY

INTRODUCTION

What should never be forgotten is that the instruments of power are ultimately judged and gain their entire meaning by the extent to which they serve national policies.

—Dennis Drew and Donald Snow[1]

Military strategy can no longer be thought of, as it could for some countries in some eras, as the science of military victory. It is now equally, if not more the art of coercion, of intimidation and deterrence. The instruments of war are more punitive that acquisitive. Military strategy, whether we like it or not, has become the diplomacy of violence.

—Thomas C. Schelling[2]

The purpose of this study is to examine *aerospace power*[3] employment in the emerging 21st century strategic environment and evaluate how its capabilities can best be used in tightly restrained conflicts.[4] Now, perhaps more than ever before, it is important for *airmen*[5] to understand how best to employ aerospace power in pursuit of national objectives. The reason is found in the magnitude of the potential dilemma. While the United States (US) stands on the verge of coming to grips with the incredible potential of aerospace power and the technological means to employ it, the military may be limited from using it in preferred ways and to its fullest potential except only in the most extreme cases. As noted military analyst Anthony Cordesman put it, "One of the ironies of the advances in modern air and missile power, and modern military technology of all kinds, is that it may be impossible to use it to achieve 'shock and awe' in all but the most drastic contingencies, and that real-world military plans and doctrine must be based on 'limits and restraint.'"[6]

US foreign policy issues have increasingly utilized the military instrument, in its various forms, to achieve desired goals. Specifically, the argument to follow is that near-future conflicts requiring the military, while increasing in technological and informational dimensions, will be restrained

and, therefore, will foremost require the application of sound strategy. Issues of maximizing operational effectiveness or employing new capabilities will be secondary. The fundamental assumption is that in order to contemplate use of aerospace power potential, predominantly or otherwise, requires a sober appreciation of its limits. The relevant issues are: how the military has been constrained and restrained in the past; understanding the nature of 21st century conflicts and adversaries; exploring how conflict in the lower end of the conflict spectrum affects use of the military instrument; and examining how military and aerospace power applications might be improved to meet new challenges.

In the background section a foundation of understanding will be laid and the framework for discussion established. Important definitions will be set forth first. Key historical cases will illustrate how the US military has been restrained politically in varying degrees in the past and how it could be restrained in the future. Following this, the complex emerging environment will be examined in order to establish a basis for comparative analysis. In this environment, as in the past, much depends on which national interests are at stake.

When a crisis erupts, the questions that senior civilian and military leadership ask—implicitly or explicitly—are: What interests are involved and what sacrifices will we be willing to make? This is where a great deal of the debate examined in this paper resides: Do limited interests justify only limited sacrifices? One may ask what about the Weinberger and Powell Doctrines. These declarations mutually proclaim that the US only commit forces when vital national interests are at stake. But, there is a problem with the definition of "vital" interests. The current US national security strategy, *A National Security Strategy for a New Century*, divides national interests into three categories: vital, important, and humanitarian and other interests. *Vital interests* are described as "those of broad, overriding importance to the survival, safety and vitality" to the Nation that "we will do what we must to defend these interests, including, when necessary and appropriate, using our

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military might unilaterally and decisively."[7] *Important national interests* are defined as those that "do not affect our national survival, but they do affect our national well-being and the character of the world in which we live."[8] Haiti, Bosnia, Kosovo, and East Timor are listed as examples. *Humanitarian and other interests* are those in which the US "may act because our values demand it."[9] With respect to these interests, the strategy says, "Whenever possible, we seek to avert humanitarian disasters and conflict through diplomacy and a wide range of partners…."[10] Responding to disasters and support for the rule of law are examples listed that will be handled with other governments and non-governmental organizations (NGO).

While the national interest descriptions are relatively clear, there is room for debate as to which specific category a situation fits and the type of response it may require. It is difficult to think of total war in the age of weapons of mass destruction for anything outside of a nation's most vital interest—survival. However, because most crises do not involve vital interests, it is generally accepted that all means short of force application are exercised to resolve them. Regarding Kosovo, National Security Advisor Sandy Berger said, "There can be circumstances short of an existential threat to the United States where the use of force is appropriate."[11] Generally, it will be seen that the political limitations established for military response are largely a function of the proximity of the crisis to vital national interests: *the closer to a vital interest, the less restraint imposed*.

In the issue analysis section, the use of aerospace power as a coercive instrument will be examined. The latest in information age and aerospace power technologies are important to this discussion. While technological limitations will persist to some degree, aerospace power will continue to rapidly develop as an element of military power, and increasingly be viewed as the military instrument of first (and possibly only) choice among world democracies. Other instruments of national power will likely increase in relative importance in the information age, particularly in conflicts at the lower end of the spectrum. Next, consideration will be given to some problems with

strategy development that—while not uncommon—are accentuated in the lower end of the conflict spectrum. The key question in order here is how do airmen develop, execute, and assess a coherent strategy and avoid narrow pursuit of target-based operations? Coercion as a political-military strategy is then considered. Questions here include what types of effects can aerospace power provide in highly restrained environments and what is the impact of restraints on parallel warfare? The section concludes with an examination of how integrating the military with the other instruments of national power might be improved.

The US military must be increasingly able to provide national leadership with sound military strategies developed—within tight political controls—while operating more effectively with allies and non-military agencies from both within the US and outside. General John P. Jumper, Commander of United States Air Forces in Europe during Operation ALLIED FORCE (OAF), described the consequence:

> We have to learn, to continue to do as good a job as we can, to articulate the tradeoffs between the efficiency of a well-planned air campaign, that takes into account all of those sophisticated techniques of targeting…balanced with the reality that, at the political level, many are going to say no to certain targets on your list that will spoil your plan entirely. And so all the efficiency you designed into it just goes away. And you have to decide how you are going to react to that. Are you going to say, 'No, we're just not going to do this?' Or are we going to re-balance the risk versus rewards and perform at the limit of the political consensus while all the time trying to push for the greater efficiency that comes from allowing the military to produce the effect without the political constraint?[12]

Dr. Dennis Drew, Dean of the USAF School of Advanced Airpower Studies, and Dr. Donald Snow, professor of political science at the University of Alabama, offer a historical comparison for the strategy-related problems of limited war in Vietnam: "Possibly the greatest failure of the United States military in Vietnam was in not recognizing and admitting this frailty [our history of combating irregular, unconventional forces] to political authorities.

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Had the services said 'we're not sure' rather than 'can do,' different decisions might well have been made."[13] Kosovo possibly could have presented a similar problem if the Kosovo Liberation Army (KLA) had not cooperated. It still remains to be seen if the political end state can be reached. The bottom line is that the adversary must be understood comprehensively. The means available to the strategist will be reviewed to see how the current modeling, simulation, and centers of excellence might be improved. Finally, recommendations are formulated in three main areas: doctrine and strategy; tools for the strategist; and strategic and operational training.

BACKGROUND

We must not start our thinking on war with the tools of war—with airplanes, tanks, ships, and those who crew them. These tools are important and have their place, but they cannot be our starting point, nor can we allow ourselves to see them as the essence of war. Fighting is not the essence of war, nor even a desirable part of it. The real essence is doing what is necessary to make the enemy accept our objectives as his objectives.

—Colonel John Warden[14]

Part of the American tradition is one of war fought with limited means for limited ends, with the involvement of civilian authorities in the conduct of warfare.[15] Only three of our wars, the Civil War and the two world wars, were conflicts in which the nation was mobilized and the military effectively "turned loose."[16] Even World War II was governed by political control—at the grand strategic level. The close of this war with the dropping of the first atomic weapons ushered in a new era of warfighting limitations. The arrival of the nuclear age and, now, the information age has served to accelerate the trend toward tighter civilian control. General Jumper described it this way, "…you are never going to create a situation where you get this blank slate that's turned over to the airman and you never hear from the politicians again."[17] The profound political, economic, and social changes since the end of the Cold War create a strategic environment warranting a review of history and politics.

Constraints and Restraints

In order to establish a baseline for comparison and contrast it is first important to review some terminology that has been used to describe important aspects of warfare since the end of World War II, and even more so since the end of the Cold War. Other key definitions used in the study are listed in the glossary.

The terms "constraint" and "restraint," while used extensively—and near-interchangeably—in political-military context, do not exist as separate defined terms, per se, within Joint or Air Force doctrines except as described in planning considerations for military operations other than war (MOOTW). Joint Pub 3-0, *Doctrine for Joint Operations*, states:

> Constraints and Restraints. A commander tasked with conducting a joint operation other than war may face *numerous restrictions* in addition to the normal restrictions associated with ROE [rules of engagement]. For example, international acceptance of each operation may be extremely important not only because military forces may be used to support international sanctions but also because of the probability of involvement by international organizations. As a consequence, legal rights of individuals and organizations and funding of the operation should be addressed by the combatant commander's staff. Also, constraints and restraints imposed on any agency or organization involved in the operation should be understood by other agencies and organizations to facilitate coordination.[18] (emphasis original)

> Webster's dictionary defines the terms as follows:

> Constraint n. 1. *moral compulsion*. 2. *confinement or restriction*. 3. repression of natural feelings and impulses.[19] (emphasis added)

> Restraint n. 1. a restraining or being restrained 2. a restraining influence or action 3. a means or instrument of restraining 4. *a loss or limitation of liberty*; confinement 5. Control of emotions, impulses, etc.; *reserve*; constraint.[20] (emphasis added)

It can be seen that the two definitions are near synonymous in some respects. However, there are important differences. To establish a baseline

for the remaining discussion, the terms will be reviewed and working definitions established for each.[21]

Constraint. While "constraint" does not exist as a separate term in doctrine, the Air Force's Joint Doctrine Air Campaign Course (JDACC) Handbook describes the term this way: "Constraints…obligate the commander to certain military courses of action…."[22] With this and the dictionary definition in mind, constraints are confines or restrictions that establish the maximum operating envelope of the military. Morally or legally, constraints are restrictions that cannot normally be overcome without negative consequences. Physically, they correspond to capability or resource limitations. Constraints can be constant, temporary, or situational (e.g., Geneva Conventions—the laws of armed conflict [LOAC], weather, equipment limitations, and legal orders). For the purposes of this study the following definition[23] will be used:

> Constraints are the physical and moral limits on the application of the military instrument. In effect, they are maximum acceptable and achievable bounds for the military instrument to operate within.

Restraint. The term "restraint" exists in Joint and Air Force doctrines as a principle of MOOTW. The MOOTW principles include: objective, unity of effort, security, *restraint*, perseverance, and legitimacy.[24] Again, Joint Pub 3-0 states:

> Restraint. **Apply appropriate military capability prudently**. The actions of military personnel and units are framed by the disciplined application of force, including specific ROE [rules of engagement]. In operations other than war, these *ROE will often be more restrictive, detailed, and sensitive to political concerns than in war*. Moreover, these rules *may change frequently* during operations. *Restraints on weaponry, tactics, and levels of violence* characterize the environment. The use of excessive force could adversely affect efforts to gain or maintain legitimacy and impede the attainment of both short- and long-term goals. This concept does not preclude the application of overwhelming force, when appropriate, to display US resolve and commitment. The *reasons for the restraint often*

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need to be understood by the individual Service member because a single act could cause political consequences.[25] (**Bold emphasis original**. *Italics emphasis added*.)

Restraints, then, reflect choices made by a nation or its military (e.g., political restrictions, ROE) restricting the application of the military instrument in some fashion. They are volitional. The JDACC Handbook definition states: "Restraints prohibit or restrict certain military actions, such as the prohibition imposed on MacArthur in Korea against bombing targets north of the Yalu River in 1950…."[26] Mark Clodfelter, author of *The Limits of Air Power*, concludes that restraints stem from "negative" objectives—those deemed achievable only by restraining military power.[27] A common example from the LOAC illustrates this point. If an adversary places a surface-to-air (SAM) site on a hospital, it loses protected status it would otherwise enjoy under the LOAC. Legally the hospital can be attacked. However, the attacking nation may well deem military benefit to be far exceeded by the consequences of causing civilian casualties and establish ROE to that end.

Restraint essentially places limits short of where constraints would actually physically or legally preclude further action. In this study the following definition, consistent with the principle of restraint, will be used:[28]

> Restraints are political and/or military choices affecting employment of the military instrument short of physical or legal limits that might otherwise be considered achievable, allowable, or acceptable.

Characterizing Restraint. Another term necessary to the discussion is the concept of "escalation" as developed by Dr. Herman Kahn in his classic work, *On Escalation*. He defined escalation as "an increase in the level of conflict in international crisis situations."[29] Kahn described three likely escalation paths that limited conflict can take "in which a would-be escalator can increase, or threaten to increase, his efforts: by increasing intensity, widening the area, or compounding escalation."[30] In essence, restraint is imposed to control escalation. For example, heavy bombers were not used in Bosnia in 1995 where, "Even had a significant military reason existed to bring

heavy bombers into the fight, DELIBERATE FORCE commanders likely would have had second thoughts, given the big airplane's inherent political liability of signaling escalation."[31] See figure 1.
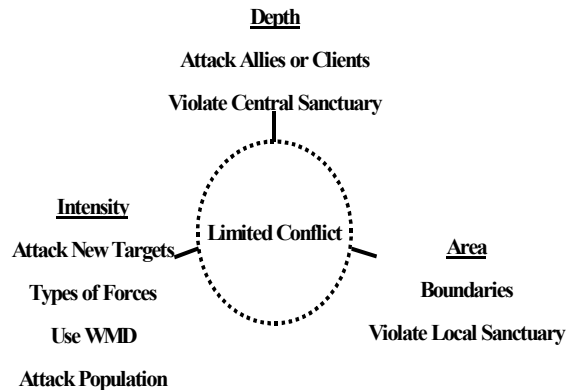
Depth

Attack Allies or Clients

Violate Central Sanctuary

Intensity

Attack New Targets   **Limited Conflict**   **Area**

Types of Forces   **Boundaries**

Use WMD   **Violate Local Sanctuary**

Attack Population

Figure 1. Restraint and Paths to Escalation[32]

The remainder of this study will use Kahn's escalation model to categorize restraints: intensity, area, and depth (compounding). While these factors are often inter-related (i.e., an increase in intensity could serve to broaden the conflict), a general classification will provide the necessary means of comparison.

Net Result: Establishing Limits. Constraints and restraints combine to create restrictions and establish limits. This is why many use the terms interchangeably. Note also that restraint directed at one level effectively results in a constraint for lower levels of command. The JDACC Handbook states: "The development of suitable military objectives, and the military strategy to achieve those objectives, is often restrained or constrained by external considerations. Such limits may be imposed by political authority, legal considerations (law of armed conflict), rules of engagement, or moral beliefs. All must be accounted for within the scope of the campaign plan."[33] Collectively, the terms are most often referred to as "constraints." For example, the use of the term "political constraint," which is often used in popular media, is synonymous with "restraint" as defined in this study.

Distinction between the two is important—restraint is the more difficult limit to successfully apply.

Another aspect of restraints is that they can become of such an enduring nature as to eventually be classified as constraints. The laws of armed conflict are internationally accepted restraints that, for the US and most nations, have become an enduring legal limit. They have, in essence, become constraints. The US has in recent history added biological weapons (i.e., Biological Weapons Convention, 1975) and chemical weapons (i.e., Chemical Weapons Convention, 1997) to the constraint category by choosing to legally bind itself and preclude their use in conflict. An example of an enduring restraint not set into law or international treaty involves nuclear weapons—the "no first use" policy.

Key History. For the US, as a nation that fights primarily in an expeditionary manner, the political objective's importance to national security has been historically somewhat difficult to establish, since physical security is not in direct jeopardy and threats to the homeland are "abstract extrapolations from the situation at hand."[34] This review, while not comprehensive, seeks to identify the major constraints and restraints present in some important modern US conflicts (see Table 1). It is important to contrast how the US military, in general, and aerospace power, in particular, were constrained and restrained in the conduct of past operations.

Other Factors. From a historical standpoint it is important to note the presence of other factors in conflict outside of threats or the actual use of the military instrument. Regarding OAF, Secretary of Defense Cohen and Chairman of the Joint Chiefs, General Henry Shelton, asserted that the political and diplomatic efforts of the NATO alliance served to isolate the Federal Republic of Yugoslavia (FRY) politically and economically.[35] Cohen and Shelton, testifying before the Senate Armed Service Committee, said so many pressures were brought to bear (political, military, economic, etc.) that "we can never be certain about what caused Milosevic to accept NATO's conditions" for an end to the campaign.[36] Employing the military instrument,

has always accompanied, to some degree, other efforts intended to help achieve the desired results. The extent to which they contribute is beyond the scope of this study, but the fact they exist is important to better understanding military power application and integration.

Table 1. Historical Constraint and Restraint Comparison[37]

	Berlin	Korea	Vietnam	Iraq	Bosnia	Kosovo
Constraints						
Moral						
	LOAC ————					——►
		UN Charter ———				——►
				Biological ———		——►
					NATO Charter ———	——►
						Chemical
Physical						
Environment	Some WX	Some WX & Geography	Some WX & Geography	Minor WX	Some WX & Geography	Major WX & Some Geography
Resources	Some	Minor	Minor	Minor	Minor	Some
Capability	Limited Capacity	Little: Precision, Hard, Mobile, Time-Critical, Standoff	Some Precision & Hard; Little Mobile, Time-Critical & Standoff	Major Precision; Some Hard & Standoff; Little Mobile & Time-Critical	Major Precision; Some Hard & Standoff; Little Mobile & Time-Critical	Major Precision & Hard; Some Mobile, Time-Critical & Standoff
Restraints						
Intensity						
Forces	No Force	Nuclear —————————				——►
		Chemical —————————			——► NA	NA
		Biological —————————	——► NA	NA	NA / No Ground Force	NA
Targeting	NA	Some Categories & Controls	Tight Categorization & Controls; Frequent Pauses	Minimum Categorization & Controls	Tight Categorization & Controls	Some Categorization & Tight Controls
Attack Population	NA	Some CD Concern	Some CD Concern	Significant CD Concern	Major CD Concern	Major CD Concern
Area	Limited	Limited	Limited; Local Sanctuary	Limited	Limited	Limited
Depth	NA	Limited	Clients	Limited	Limited	Limited

Emerging Strategic Environment

The emerging strategic environment suggests increasing challenges below the vital national interest level. While this discussion will not belabor a subject that has been discussed extensively, it is important to highlight some important

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characteristics that will have bearing on employing military power. The proliferation of WMD and advanced weapons technology are increasing the potential danger and risk. Many envision a new era of limited war. Alvin and Heide Toffler, authors of *War and Anti-War*, call these new limited conflicts that parallel the "de-massification" of advanced economies in the information age, "niche wars."[38] This environment is one of new threats, new actors, with forces increasingly joined by allies and agencies outside the military— domestic and foreign.

Confronting threats through coalitions will, among other things, result in more military restraints, not less. Increased restraints prompt an examination of opportunities for military and civilian policy makers to consider new force application strategies and to re-consider measures short of force to resolve conflict. For the US, several factors have combined to contribute to a lack of understanding of limited warfare: vast resources, powerful technologies, focus on tactical aspects of combat, and under-emphasis in military history and international politics. Authors Dennis Drew and Donald Snow believe, "The result is a lack of appreciation of the relationship between politics and war that makes the military a poor advisor to political authority on anything other than the technical side of military activity and fails to provide the base for dialogue between military and civilian authorities."[39]

The US Commission on National Security/21st Century (USCNS) recently published its first report on the changing security environment. The USCNS believes the essence of war will not change, but that the nature of threats will change and the information age will accelerate change. "Taken together, the evidence suggest that threats to American security will be more diffuse, harder to anticipate, and more difficult to neutralize than ever before."[40] This, "…will require sustainable military capabilities characterized by stealth, speed, range, unprecedented accuracy, lethality, strategic mobility, superior intelligence, and the overall will and ability to prevail…. The mix and effectiveness of overall American capabilities need to be rethought and

adjusted, and substantial changes in non-military national capabilities will also be needed"[41] Adversaries at a technological disadvantage will try to negate the advantage of superior technology by obtaining weapons of equal or greater power, by building effective defenses, and by using superior strategy and tactics. According to Dr. Earl H. Tilford, Jr., Director of Research at the US Army War College Strategic Studies Institute, "Our greatest threat will come from those opponents who will exploit cultural and political asymmetries to blunt our technological superiority."[42]

Post Cold-War and the Information Age. Emergence of the information-based economy and globalization add another level of complexity yet to be understood. The world is now made up of interlocking systems with global American interests. Strategic choke points are migrating from land and sea to cyberspace and economic markets.[43] Former Defense Intelligence Agency Director, Lt. Gen. Patrick Hughes, said that the "micro and nano technologies" of the "techno-info era" not only will make traditional warfare less likely, but have placed the US in a position where military force cannot solve all the problems that will likely result.[44] Several types of adversaries in potentially multi-faceted conflicts could be confronted (see Figure 2.).

A variety of conflict types will require versatile forces and approaches to strategy. According to the Toffler's, "…with a world fast dividing into First, Second, and Third Wave civilizations, three distinctly different forms of warfare need to be averted or limited, along with various combinations…. The variety of wars requires a variety of anti-war forces, not a single omnipurpose unit."[45] Pape states:

> The end of the Cold War and the rise of potential regional
> hegemons are shifting national security policy away from
> deterring predictable threats toward responding to
> unpredictable threats after they emerge, making questions
> about how to compel states to alter their behavior more
> central in international politics. This trend is also apparent
> in the growing role of air power in U.S. military strategy.
> As the American public's willingness to bear military costs
> declines, the role of air power in overseas conflicts is
> increasing because it can project force more rapidly and with

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less risk than land power and more formidably than naval power.[46]
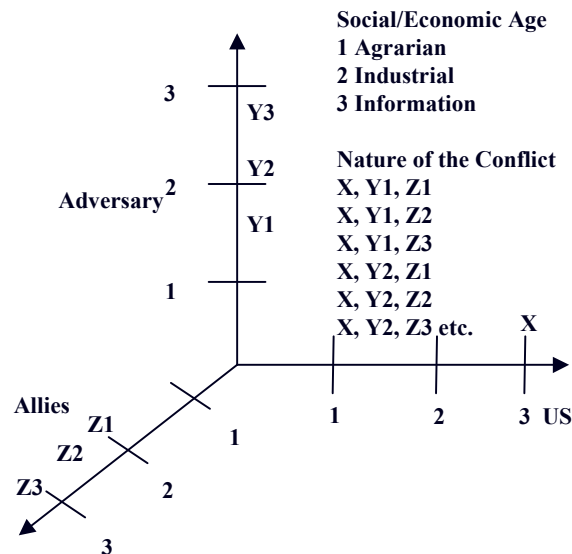

Figure 2. Complex Information Age Construct

The spectrum of conflict—from MOOTW, to small-scale contingencies (SSC), to major theater war (MTW), to nuclear war—is a useful construct to illustrate the political-military relationship (see figure 3). While politics are always preeminent as the governing factor, in the high end of the spectrum (right side), the military without question is principally used as a martial instrument. Drew and Snow point out that, "Total war tends to lessen the friction between the military and civilian authorities. This is so to some measure because a total war calls for maximum military effort, thereby lessening the politically defined shackles on the conduct of hostilities."[47] On the left side of the spectrum (the focus area of this study), the military as a political instrument is accentuated.

The lower end of the spectrum tends to be a capability-centric area for the military. With respect to this, Clausewitz states, "the less intense the motives, the less will the military element's natural tendency to violence coincide with political directives. As a result, war will be driven further from

its natural course, the political object will be more and more at variance with the aim of the ideal war, and the conflict will seem increasingly *political* in character."(emphasis original)[48] Noted aerospace power author Colonel Phillip Meilinger stated, "…as we continue to get involved in things…if our national interests are not at stake, then there's going to be a lot of heavy constraints that are going to be placed on the way we use military force."[49]
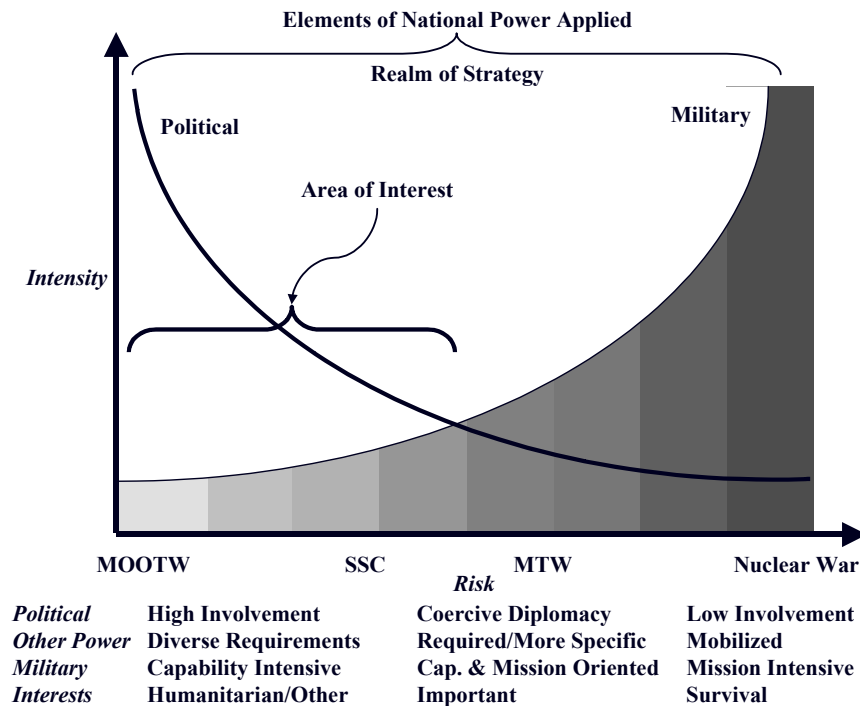

Figure 3. Spectrum of Conflict

AEROSPACE POWER AS A COERCIVE INSTRUMENT
The degree of force that must be used against the enemy depends on the scale of political demands on either side. These demands, so far as they are known, would show what efforts each must take; but they seldom are fully known— which may be one reason why both sides do not exert themselves to the same degree.

—Clausewitz[50]

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If Kosovo had been a "war" against Serbia, it would have been over in about two and a half hours!

—Lord George Robertson, NATO Secretary General[51]

Some experts foresee a "bitter harvest" for the US and the North Atlantic Treaty Organization (NATO) in strategic terms, cautioning about the uniqueness of OAF and believing there is a "great danger in drawing larger implications from it."[52] What conclusions, if any then, can be drawn? Many argue that the DESERT STORM, while easily categorized as a military "win," has yet to produce a strategic victory. Specific lessons from Kosovo and the Gulf War aside, understanding the nature of a conflict, knowing the adversary, and developing a coherent approach to strategy are timeless ingredients of successful conflict resolution.

Clausewitz posited that, "The maximum use of force is no way incompatible with the simultaneous use of the intellect."[53] Sun Tzu might have said that the minimum use of force is only possible to contemplate with maximum use of the intellect. However, Clausewitz and Sun Tzu do not present a dichotomy. Each looked at war from a different level of analysis. Dr. Michael Handel, noted military historian, points out:

> Sun Tzu's framework is much broader than that of Clausewitz, who wrote a treatise on the art of waging war itself, not on the workings of diplomacy before, during, and after war. Clausewitz's analysis begins at the point where diplomacy has failed and war has become unavoidable….
>
> While Sun Tzu is primarily concerned with the conduct of war at the highest strategic level, Clausewitz focuses on the lower strategic/operational levels of warfare.[54]

Handel explains that Sun Tzu's preference for the use of all means short of war and victory without fighting is "primarily relevant for the type of military conflict with which Sun Tzu would have been most familiar: dynastic wars waged for limited objectives rather than the total-ideological wars of the nineteenth and twentieth centuries."[55] Consider OAF as current example of limited war. Although as Lord Robertson pointed out that it was not a total war, OAF had elements of MOOTW, a SSC, and a MTW occurring

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simultaneously requiring military and civilian operations and organizations. Hence, the strategic nature of any conflict encompasses all instruments of national power. The military then cannot focus exclusively on the conduct of war without understanding how it started and how it is expected to end. Similarly, diplomacy cannot focus on resolving a conflict with all necessary means, then use the military without an understanding of what force can do, if anything, particularly if there are severe restraints.

Emerging Aerospace Power Capabilities

Overall, programmed aerospace force improvements will go far to overcome physical constraints. Dr. Karl Mueller of the School of Advance Airpower Studies concludes that the "NATO air campaigns over Bosnia and Serbia demonstrate that air power has in some ways reached a point of great maturity. The technologies and techniques of air attack have advanced…to the point that aircraft can strike and destroy most types of ground targets with considerable efficiency…."[56] Additionally, force improvements will go a long way in dealing with restraints (i.e., better identification and accuracy contribute to less collateral damage). The changing nature of the potential restraints comprised a formidable task for OAF planners. According to General Jumper, "…if you look at the situation in Kosovo, we started off in actually May of '98 with direction to do planning. The planning that we did was with a certain set of political constraints. And over the time between June of '98, when we briefed our first air campaign plan to the CINC, to March of '99, when we started flying combat missions, we had done over 40 iterations of the air campaign plan. All of those dictated by the limit of political consensus…."[57] The question remains what effect does striking a particular target have on attaining the specified goal? Destroying a bridge in such a manner that avoids all collateral damage is merely a bombing exercise if it is not pertinent to the adversary's strategy or one's own strategy.

Programmed USAF Improvements

Combat Aerospace Forces (CAF). Nowhere is the reduction of physical constraints on aerospace power more telling than in the CAF—the

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inventory of attack, bomber, and fighter aircraft. If an OAF-like conflict were fought in 2005, weather would essentially cease to be a constraint for weapons delivery. By then, *every* USAF combat aircraft type will have all-weather precision-guided munitions (PGM) and most will have standoff[58] attack capability (see table 2).

Table 2. USAF All Weather Precision Attack Capability

Aircraft	Direct Attack					Standoff		
USAF All Weather Precision Attack Capability, FY99								
	EGBU-15	EGBU-27	EGBU-28	WCMD	JDAM	JSOW	JASSM	CALCM
B-1					■			
B-2					■			
B-52					■			■
F-15E	■							
F-16 B30								
F-16 B40								
F-16 B50								
F-117								
USAF All Weather Precision Attack Capability, FY05								
B-1				■	■	■	■	
B-2					■	■	■	
B-52				■	■	■	■	■
F-15E	■	■	■	■	■			
F-16 B30				■	■			
F-16 B40		■		■	■	■	■	
F-16 B50				■	■	■	■	
F-22					■			
F-117		■						

Source: HQ USAF/XORW, "Fighters/Bombers/Weapons Integration Schedule," February 2000.

Mobility and Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) Forces. Mobility and C4ISR forces are foundational requirements, or enabling forces, of all aerospace operations. Regarding mobility forces, there is an increasing importance for rapid response and sustainment. Aerial refueling combined with the large capacity of today's airlift fleet has increased airlift capability from 2,491 ton miles per mission in the Berlin Airlift to over 345,000 ton miles per mission by Operation RESTORE HOPE in Somalia in 1993.[59] Aerial refueling is also critical to long-range power projection capability for land-based and naval aviation. General Michael Ryan, Air Force Chief of Staff, speaking at the February 2000 Air Warfare Symposium, outlined the future

priority for mobility forces as developing "complete visibility into what is being moved and assured delivery and making sure that it gets there. It is any time in any place, and that is not just on the surface of the earth. That has to do with our ability to lift things into orbit…."[60]

For C4ISR forces, priorities center on determining what can be migrated to the ultimate high ground of space and assuring force-wide connectivity. Again, speaking at the Air Warfare Symposium, Gen. Ryan said "we must link every node of our Air Force and every one of our platforms together so that we can come up with precision dominance, the ability to get inside the [decision] cycle of whatever kind of adversary we are fighting, whether it is a famine or a foe."[61] He went on to say that planning to improve the USAF's ability to attack time critical and moving targets "has a lot to do with our capability to net all our aircraft together—not just the attack aircraft, but the ISR aircraft and our air operations center—to our commander…. I'd like to set a timeline of 05 [Fiscal Year 2005] to have that at least to all platforms."[62]

This study confirms the key conclusion of a 1993 RAND study on the contribution of aerospace power to joint operations. While acknowledging some situational constraints and the need for continued improvement in C4ISR and mobility forces, it went on to conclude:

> …*the results of our analysis do indicate that the calculus has changed and airpower's ability to contribute to the joint battle has increased*. Not only can modern airpower arrive quickly where needed, it has become far more lethal in conventional operations. Equipped with advanced munitions either in service or about to become operational and directed by modern [command and control] systems, airpower has the potential to destroy enemy ground forces either on the move or in defensive positions at a high rate while concurrently destroying vital elements of the enemy's war-fighting infrastructure. In short, the mobility, lethality, and survivability of airpower makes it well suited to the needs of rapidly developing regional conflicts….[63] (emphasis original)

Caution will be required; however, in order to avoid "chasing" new capabilities for their own sake which could have a negative effect on the use of military force as a whole. Dr. Mueller says "we continue to be more effective at investing in new technology than in the personnel who operate it, especially those in the force multiplying specialties ranging from battle management to strategic analysis."[64] He went on to say that on the strategic level, "the art and science of coercive air power remain quite underdeveloped."[65] To this end, maintaining a robust strategy formulation mindset and analytical tools to support it are not inconsistent with conflict at any location on the spectrum.

Coercion as an Alternative to Traditional US Military Strategy

General Joseph Ralston, as Vice Chairman of the Joint Chiefs speaking at the 1999 Air Force Association convention, stated "when the political and tactical constraints imposed on air leaders are extensive and pervasive—and that trend seems more, rather than less, likely—then gradualism may be perceived as the only option, and whether or not we like it, a measured and steadily increasing use of airpower against an opponent may be one of the options for future war."[66] The gradualism that Gen. Ralston refers to is in essence coercion. Thomas C. Schelling in his classic study, *Arms and Influence*, explained coercion by contrasting it with brute force. "The purely 'military' or 'undiplomatic' recourse to forcible action is concerned with enemy strength, not enemy interests; the coercive use of the power to hurt, though, is the very exploitation of enemy wants and fears."[67] Coercion then, can be thought of as the art of influencing an adversary's behavior by threats, primarily the threatened use of force, including the limited use of actual force to back up the threat.[68] The ultimate coercive measure of success is being able to exploit the adversary's wants and fears without resorting to force while achieving the desired objective.

Schelling identified three aspects of coercion:[69] knowing the adversary; having a bargaining position; and clear communication of the desired behavior. Knowing the adversary is key. In order to successfully coerce an adversary, Schelling stated "one needs to know what an adversary

treasures and what scares him and one needs the adversary to understand what behavior of his will cause the violence to be inflicted and what will cause it to be withheld."[70] He went on to say:

> To seek out and to destroy the enemy's military force, to achieve a crushing victory over enemy armies, was still the avowed purpose and the central aim of American strategy in both world wars. Military action was seen as an *alternative* to bargaining, not a *process* of bargaining.
>
> The reason is apparently that the technology and geography of warfare, at least for a war between anything like equal powers during the century ending in World War II, kept coercive violence from being decisive before military victory was achieved[71] (emphasis original)

In this context, the goal for the strategist is to develop, execute, and assess a coherent coercive strategy that will be decisive before military victory in the traditional sense, while avoiding narrow pursuit of target-based, or attrition, operations. Coherency can best be realized in a top-down or strategy-to-task approach (see figure 4). One can see that the will of the opponent is at the core of the problem. In Kosovo, NATO commanders were never sure of what it would take to break Milosevic's will. "How to accomplish this was one of the overarching moral, political and military questions of the war—and a source of dissension among the allies."[72] In an attempt to develop a strategy focused on that will, one must first decide what parts of the problem are amenable to political as opposed to military solutions.[73]

Historically, this has proved difficult for the US. The attempt to use coercion in Rolling Thunder to compel the North Vietnamese to cease their support of the Vietcong was a failure. The choice of an attrition strategy ignored several critical factors: commitment of the adversary to the cause; assumed we could inflict appropriate casualties; and by its nature, a war of attrition is a long and drawn-out affair.[74] Given the total Vietnamese commitment, the strategy had little effect except to strengthen adversary resolve and slow their progress to the ultimate goal.[75]
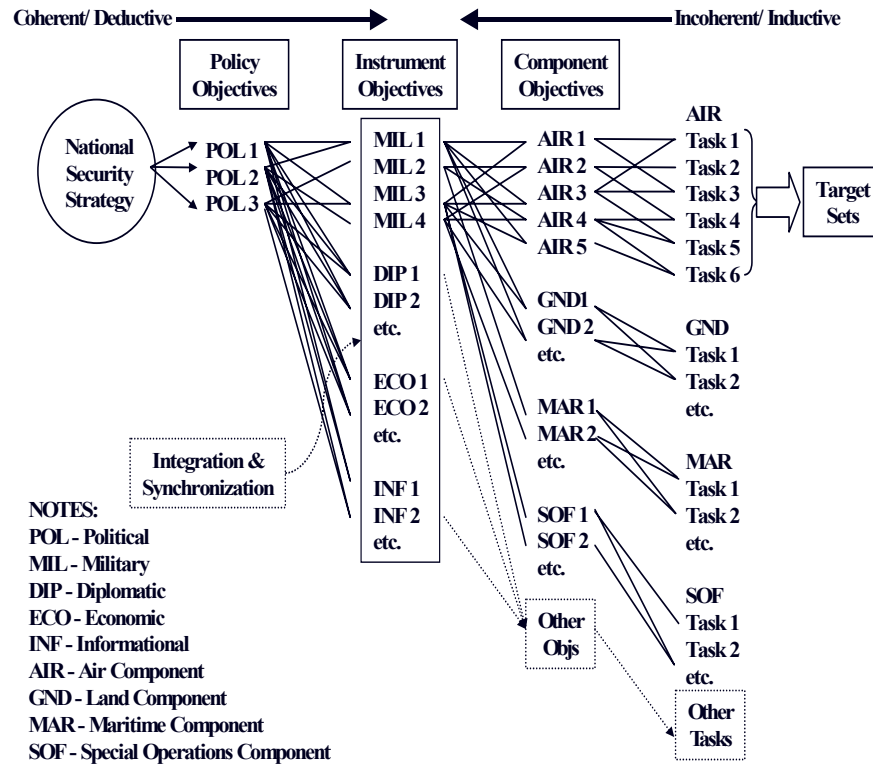
Figure 4. Strategy-to-Task Construct[76]

Maximum Achievable Force. With respect to the Korean War, Schelling noted that, "Restraint took the form of specific limitations on the fighting; within those limits, the war was 'all out.'"[77] General Wesley Clark, Supreme Allied Commander in Europe, stated in his Senate testimony "one of the lessons that comes out of this [OAF] is the need that once you cross the threshold, to move as rapidly as possible to the decisive use of force, within the military feasibility and the political constraints."[78] Senator Joseph Lieberman, speaking on, "Transforming National Defense for the 21st Century," said the following about the idea of "all out" within "political constraints":

> The current doctrine of overwhelming force is not desirable politically nor necessary militarily in all cases…. Accordingly, we may have to focus less on achieving maximum possible force and more on achieving what my

colleague [Senator] Carl Levin has termed *"maximum achievable force."* By this he means that a variety of constraints will likely exist that will determine what means we can use and how and where we can use them. However, since we can never allow "maximum achievable force" to fall below the level of necessary force, we need to *utilize the rapid advances in technology to increase lethality and to know better our opponents' vulnerabilities so we can achieve devastating effect through the selective and graduated application of force.*[79] (emphasis added)

Determining "maximum achievable force" is a question about the proper use of military power within the context and application of the use of national power orchestrated to achieve the desired aims—limited or unlimited. It is an "unlimited" commitment within the stated bounds of policy. When this force is determined, one of two options is available to US military leadership: fight within the established limits with maximum achievable force or be prepared to explain why the restraints will not work. The major question is: Is "maximum achievable force" within the declared policy bounds good enough? Or, how does one avoid narrow-focused, target-based planning in an era of not only limited ends, but also limited means (e.g., no ground forces) and limited ways (e.g., alliances and coalitions; very low collateral damage)? As shown, aerospace power means (i.e., find, fix, track, and target capabilities) are increasing, but the way airmen prefer to employ the various means have been challenged. The military strategist must be able to analyze all the limits in the equation rapidly and accurately, including non-military means, and make a recommendation as to the feasibility of maximum achievable force in any given case.

While aerospace power has recently proved it can play a formidable role in successful coercion, it does not come without problems. First of all, as 78 days in Kosovo showed, coercion takes time. Time can be a problem for democratic nations that find it much easier to support long wars that are total in purpose rather than limited.[80] America's least popular wars have been limited. Other problems of limited force application include:

1. *Shock and paralysis*[81] can be lessened or negated.
2. *Parallel and simultaneous operations*[82] can be curtailed (contribute to #1).
3. *System adaptation*[83] associated with gradual force application can occur.
4. Ongoing *system analysis and assessment*[84] can be complicated (associated with #3).

However, the most formidable problem deals with having a comprehensive understanding of the adversary. Accurate intelligence is at a premium. In rapidly unfolding operations Byman, Waxman, and Larson, authors of *Air Power as a Coercive Instrument*, say:

> Air power's ability to destroy a range of targets, and its growing capabilities in intelligence and precision strike offer new options to military and political decisionmaking. *These capabilities, however, do not always lead to more favorable outcomes* for the United States. Even if a particular target is destroyed successfully, the change in behavior sought—the true object of coercion—often fails to occur. *Understanding this relationship between a target's destruction and the desired outcome is difficult and requires insights into culture, psychology, and organizational behavior.*[85]
> (emphasis added)

Factors in Successful Limited Force Application. In a series on OAF, *The Washington Post* reported, "By the end of the 78-day air war, NATO had so many planes available that it could cover all the bases. But the debate continued—and continues today—over the best strategy for such an air campaign."[86] When coercive threats fail and force is used, one would like to know what factors contribute to successful limited force application. In a study of 25 post-World War II cases involving air power and coercion, Byman, Waxman, and Larson found three conditions associated with successful coercion: threaten strategy; magnify third-party threats; and escalation dominance.[87]

Threaten Strategy. When its strategy for victory—not simply its military operations—is impeded, an adversary is more likely to accede to negotiations.[88] This does not have to wait until armed conflict begins. For example, after securing access to ports and airports, infrastructure

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improvement and other aid in neighboring friendly states can begin. In Kosovo, once the behind-the-scenes approval process started for a possible ground invasion option, NATO forces simultaneously repaired roads for refugee movement and made them strong enough to support the weight of mechanized forces.[89] Others point out that efforts to coerce an adversary depend far more on the vulnerabilities of the attacked than on the capabilities of the attacker.[90] Dr. Robert Pape, author of *Bombing to Win*, concluded that, "Matching the coercer's strategy to the target state's specific vulnerabilities can be decisive: it will determine how severe the effects of the coercer's attacks are and thus how strong the pressure on the target's political calculations."[91] To deny the adversary's strategy means to target all adversaries and focus on the strategic center(s) of gravity. Answers to where, how, and for how long to apply force will follow.

Magnify Third-Party Threats. Coercion is enhanced when other threats to the adversary such as external military and internal threats are magnified.[92] The more effective of the two is to reduce the ability of the adversary to defend against external military threats.[93] In 1995, Bosnian Serbs had to contend with the possibility of losing a large area of western offensive when Croat and Bosnian Muslim forces went on the offensive at the same time Operation DELIBERATE FORCE air strikes were underway.[94]

Fostering internal instability in the adversary's country can prove more difficult.[95] Internal security is critical to totalitarian regimes, as efforts to date in Iraq have so far proved unsuccessful. Some studies conclude that punishing populations will likely backfire. Pape found that the adversary population is unlikely to turn on its government unless it doubts the moral worth of the system as a whole, as opposed to specific policies or leaders.[96]

Escalation Dominance. Escalation dominance is the ability to increase the adversary's costs while denying it the opportunity to neutralize those costs or counterescalate.[97] Essentially one-sided attrition helped in tolerating the length of OAF. In describing the campaign in Kosovo, General Clark said it, "was an effort to coerce, not to seize. It only made good sense

that at some point, if [Milosevic] continued to lose and we didn't that he would throw in the towel…. It was a function of variables beyond our predictions—ultimately, his state of mind."[98] Meilinger described it this way:

> The air war over Kosovo introduced a new and unique twist to the concept of gradualism. The combination of stealth and electronic warfare, but especially precision guided weapons…allowed NATO to fight a one-sided war of attrition against the Milosevic regime. This is unique because wars of attrition, like that in Vietnam, are generally two-sided….

> …The Serbs were unable to inflict reciprocal punishment on NATO and, as a consequence, their morale declined steadily.[99]

When an adversary cannot effectively strike back it makes it easier to win. However, coercion is a dynamic process of two or more parties. This is the area where asymmetric responses come to the fore. While an adversary may not be able to strike back similarly, it may work to hinder basing access or generate casualties and attempt to counterescalate.

Policy Issues

A combination of factors is always brought to bear by a nation in conflict—coercion to total war. Thomas Griffith, in his study of air strategy in the Korean War, concluded that despite the quantity and ferocity of Far Eastern Air Forces attacks and other military efforts, "most authors agree that a combination of military, political, and economic factors was necessary to end the war."[100] In a recent speech, General Henry Shelton, Chairman of the Joint Chiefs of Staff, said "the overriding lesson from our extensive experiences in contingency operations in this decade is that we must bring <u>all</u> our resources to bear—economic, political and diplomatic, and military—if we expect to be fully effective in solving non-military problems that are rooted in religious, cultural or ethnic strife."[101] (emphasis original) Great Britain's Ministry of Defence Kosovo report said that the conflict "emphasized the extent to which the means of responding to an international crisis are inter-linked. The diplomatic and political initiatives pursued by the international community

continued in parallel with NATO's military campaign and ultimate success was due to the synergy of all these approaches."[102]

Integrating Instruments of Power. Byman, Waxman, and Larson point out, "To ask the question 'Did air power coerce?' is misleading because a particular military instrument never operates in a vacuum. The question is not whether air power 'worked,' but rather whether it helped or hindered coercion."[103] Two major points on this: First, in a full-scale war, such as a MTW, it is self-evident that the nonmilitary instruments of power must be mobilized in support of the military. Second, and not so evident, while not requiring mobilization in the MTW context, a "package" approach— sophisticated orchestration of political, psychological, economic, and military actions—is required to combat conflicts at the lower end of the conflict spectrum. Gen. Clark stated in his Senate testimony on OAF:

> …we did this campaign as an exercise in predominantly military power and I think, as we look ahead, we *shouldn't let the military instrument be isolated from the diplomatic and economic instruments of power* that can be brought to bear…. There were *a number of measures* that could have been taken sooner and some that were never actually implemented that would have augmented, *maybe even been more powerful than the military instrument, maybe have prevented the use of the military instrument*.[104] (emphasis added)

In the emerging strategic environment, maximum achievable force must be thought of not only in military terms, but also in political, economic, and informational terms as well. Power in the information age is becoming increasingly distributed. Total national power available is more appropriately viewed in a holistic manner (see figure 4). Therefore the best solutions are likely to be achieved by working with all major actors in a flexible "Third Wave" organization.[105] This is easy to think of if one starts at the strategic level—focusing first on the end state or what one wants the adversary to do and not on the means, such as armed forces. Objectives are set with a view to their direct effect on the adversary system and its key decisionmakers.[106]
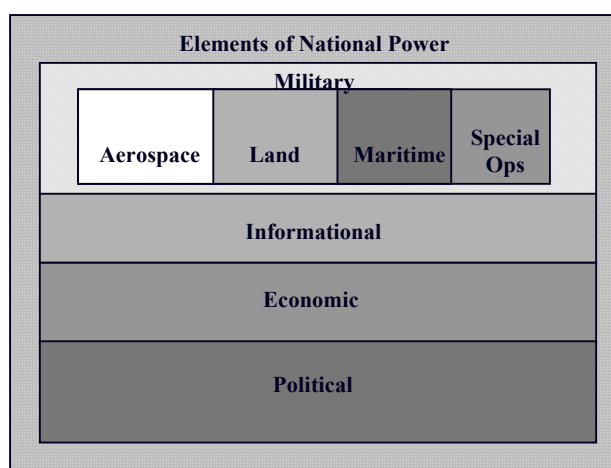
Figure 5. Elements of National Power Model

In addition to military strength, NATO has great economic and political power. In Kosovo, however, NATO did not exercise all means short of force before resorting to force. For example, the US did not take unilateral actions to extend the full compliment of sanctions to ban oil sales and freeze FRY assets in the US until 1 May 1999—over one month after commencing hostilities.[107] While it is not known if these factors without force would have helped achieve the objectives, the point is that these were things that were pursued under the assumption that they would make a difference. Pape believes more study is required on the effects of blockades, domestic unrest, and the like and how they affect people and governments in agricultural, industrial, and information age societies.[108] In their seminal work on the use of armed forces as a political instrument, *Force Without War*, Blechman and Kaplan had the following to say:

> A state has many means at its disposal to obtain objectives abroad.… These instruments, together, are an orchestra, to be used in accordance with the differing requirements of individual scores.
>
> …[Clausewitz] saw war as "a continuation of political intercourse with an admixture of other means." So, too, the armed forces—by their very existence as well as by their general character, deployment, and day-to-day activities— can be used as an instrument of policy in time of peace. In

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peace, as in war, a prudent statesman will turn to the military not as a replacement or substitute for other tools of policy but as an integral part of an "admixture…of means."[109]

However, as Pape points out, trying to determine the extent to which non-military "admixture of means" played in Kosovo or the extent to which they might play in the future, will be a challenge, but must be understood.[110]

IMPLICATIONS FOR AEROSPACE POWER STRATEGY

Soldiers usually are close students of tactics, but rarely are they students of strategy and particularly never of war.

—Bernard Brodie[111]

Gradual escalation is fraught with problems, but there were good reasons for Thomas Schelling to recommend it in the 1960s, and the fact that Rolling Thunder failed did not prove that idea was without merit. Again, this question misses an even larger point, however. Even if gradual escalation turned out to be the worst air power idea since the Great Air Mail Fiasco of 1934, airmen should not have responded to the experience simply by averting their eyes and calling on Heaven to smite the heretics. What Kosovo does prove about the subject, for those who may not have realized it, is that sometimes strategists will be called upon to design and execute gradually escalatory air campaigns whether they approve of the concept or not, and thus they should develop expertise in the art form even if they abhor it.

—Dr. Karl Mueller, School of Advanced Air Power Studies[112]

Restraints will complicate future military equations immensely. This element alone places a premium on strategy, from grand to tactical. Planning iterations intended to examine numerous possible restraints take time and consume numerous man-hours. Much of the time is devoted to analyses that have nothing to do with gaining an understanding of the adversary and developing an appropriate strategy, but with processing information. In the information age, analyses can be increasingly accomplished with the aid of modeling and simulation. This is not to say strategy by "algebra" or computer. It is to say that national security organizations, including the military, can take advantage of technology to aid numerous and complex planning efforts. Many agencies (e.g., Central Intelligence Agency, Defense Intelligence Agency, and National

Security Agency) study a potential adversary from different perspectives. Most already have individual computer-aided analyses and simply need to be organized in a fashion that allows for a synergistic analysis. Improved coordination alone could contribute to the available response options. The output of such a comprehensive analysis could be provided to strategists. Cordesman believes that, "the real lesson of Kosovo is that the US needs to develop far better criteria for characterizing a given contingency, carrying out risk analysis, and determining a broad range of military options…"[113]

Doctrine-Strategy "Gap"

The major issue is the gap between MOOTW and MTW—the area of coercion. The focus of the gap is offering up military forces and capabilities in ways that support and lend credibility to coercive diplomacy. In a 24 March 1999 news conference on OAF, Secretary Cohen reiterated that no ground forces were being planned for the operation: "What we have indicated to the Congress and to the country is that this is an air operation, campaign."[114] No one in senior military leadership was recommending an aerospace power only operation, but that was to be the restraint. However, one should not confuse the imposition of restraint with the means to formulate a recommendation. An aerospace power only decision could possibly have been recommended by the military, but with little history and no sophisticated campaign modeling available, the military acquiesced in a decision based on hope. The fact is that existing joint doctrine and strategy are land power-centric (ground forces in the supported role) and means are not adequately available to assess a crisis and make a recommendation for aerospace power only or anything else only. The basis for change lies in having less concern over which branch is decisive and more concern that the right tools are employed to be decisive. Senator Joseph Lieberman, Senate Armed Services Committee member, noted, "The eye-popping advances in technology we are engineering today are paving a path not just to a revolution in military affairs, but to a complete paradigm shift in the American way of war…."[115] He went on to add "successfully transforming our military requires that we move to the next level of jointness.

By now, virtually every expert believes that future operations will be increasingly joint, interagency, and combined, and that while competition among the Services can assist in determining how best to exploit new capabilities or solve emerging challenges, there should be a much greater emphasis on collaboration…[and] interdependent force structures….”[116]

The idea of “jointness” here is not one of a single military. The idea is the total inclusion of the separate parts into the broader whole. Sir Richard Johns, Royal Air Force Chief of Staff observed that “within all levels of warfare, whether on land at sea or in the air, there are few if any absolutes. Balanced judgements within the joint arena of warfare can only be made through the abandonment of prejudice and dispassionate consideration of first, military facts, and, second political sensitivities which condition the use of military force.”[117] The strategist must think in terms of denying the adversary’s strategy and isolating the battlespace with all available means, realizing that the most effective means may be aerospace power and information.

Inter-agency Cooperation and Coordination. During ODF in September 1995, the President remarked “I am frustrated that the air campaign is not better coordinated with the diplomatic effort.”[118] Ambassador Holbrooke goes on to comment about the situation:

> This was an astute observation. The same point troubled me deeply; there was no mechanism or structure within the Administration capable of such coordination. It was, in fact, the role of the NSC [National Security Council] to coordinate such interagency issues. I wanted to tell the President that this problem required immediate attention. But relations among the NSC, State, and Defense were not something an Assistant Secretary of State could fix….[119]

Apparently this was one of the factors leading to Presidential Decision Directive 56 (PDD-56), *Managing Complex Contingency Operations*. PDD-56 defines “complex contingency operations” as peace operations, humanitarian intervention and assistance, but *unless otherwise directed, does not apply to military operations*.[120] It states that, “…effective

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responses to these situations may require multi-dimensional operations composed of such components as political/diplomatic, humanitarian, intelligence, economic development, and security…."[121] The DOD *Kosovo/Operations ALLIED FORCE After-Action Report* (KOAFAAR) concluded:

> …the interagency planning process (1) helped to mobilize and coordinate the activities of different agencies, (2) identify issues for considerations by [NSC] Deputies, (3) provide planning support for international organizations (e.g., OSCE and United Nations), and (4) develop benchmarks for measuring progress. This political-military planning played an important role in ensuring that the United States achieved the objectives set forth by the President. …As it became clear that Milosevic intended to outlast the alliance, more attention was paid to other ways of bringing pressure to bear, including economic sanctions and information operations. While ultimately these instruments were put to use with good effect, more advance planning might have made them more effective at an earlier date. Our experience in Operation ALLIED FORCE has shown that [PDD-56] had not been fully institutionalized throughout the interagency.[122]

It remains to be seen if the DOD recommendation to improve the interagency process will be adopted. Overall, there is some concern and confusion about how extensively the PDD should coordinate military operations. Other aspects of the PDD that must be addressed deal with training. It does not require training below the Deputy Assistant Secretary level.[123] Also noteworthy is, while PDD-56 stresses the importance of education to interagency training, only the National Defense University and the Army War College are institutions required to examine training from the DOD perspective.[124]

Response: What About Phase 0? The National Military Strategy describes the elements of US military strategy as "shape, respond, and prepare." Respond is what the US does when a crisis occurs—the reactive phase. In Kosovo, this was called "Phase 0," or the actions taken short of force by NATO in attempt to negotiate a peaceful resolution. If one thinks

about "respond," or Phase 0, in terms of trying to defeat the adversary's strategy, measures short of force application may be viewed in a different light. This is not to argue for the military to accomplish non-military tasks, per se, but to better coordinate efforts and, if required, pave the way for military operations. The theater strategy in Kosovo consisted of combat and non-combat operations: OAF, SHINING HOPE in Albania, operations in Macedonia, as well as the preceding Kosovo and Air Verification Missions.

If the military can posture in such a way as to increase the credibility of the threat (sufficient likelihood in the adversary's mind that it will occur) while at the same time support peripheral objectives, is not the overall value of the threat increased? Does this approach increase the likelihood the coercer will act regardless? Or does it allow the coercer to improve its overall position while achieving some peripheral objectives? The KOAFAAR stated, "The alliance had been addressing this crisis—through diplomatic activities and military planning—for some time before the onset of the military campaign itself…trying to resolve the conflict before the operation commenced."[125] The threats to regional stability and possible humanitarian crisis were known, but were not dealt with proactively. As Cordesman states, "NATO threatened war without having a clear contingency plan to deal with the very problem that led it to threaten air strikes in the first place."[126] There was potential to deny Milosevic's strategy prior to OAF and, while requiring resources, it would have served a long-term plan of regional stability had the crisis been averted. The KOAFAAR concluded, "One general lesson learned is that similar attempts at asymmetric challenges should be anticipated in future conflicts…."[127] Reactive approaches in the future may not be sufficient to challenge the range of possible asymmetric responses.

The strategist must develop "transitional" elements—those that are not provoking, but can facilitate combat if needed. In Kosovo, this could have been analogous to DESERT SHIELD. A "Balkan Shield" within the framework of the 1998-99 Kosovo Verification Mission provided opportunities for transitional actions. Major General Edward Atkeson, USA

(Ret.), senior fellow at the Association of the United States Army's Institute of Land Warfare observed:

> …inasmuch as one cannot foresee the future, strategy is often framed to broaden one's own options while narrowing the opposition's. In the case of Kosovo, it would have been useful to have troops deployed in the area in April and May to assist in the reception and care of the multitudes of refugees. While the refugee migration might not have been foreseeable, good strategy would have deployed troops as a precautionary step.[128]

Transitional elements of coercive strategy point to the consideration of the coercive effects of non-combat aerospace power when used in conjunction with diplomacy and the other instruments of national power. This is the area where mobility and C4ISR come to the fore. Mobility forces can accomplish things from "showing the flag," to humanitarian assistance, and support to infrastructure improvements. The US is increasing means of transparency with aircraft like the Airborne Warning and Control System (AWACS) and the Joint Surveillance Target Attack Radar System (JSTARS). Colonel Meilinger believes it is an area where the US can establish a track record of transparency applied to a potential adversary:

> I think it is getting to the point now where you can do a little bit more educating, when in the newspapers—the news media—when you send a JSTARS, an AWACS, the B-2, or something like that, you can use the media to demonstrate or try to explain why this is such a significant event using real historic examples from the past decade to show what this is often a prelude to….[129]

> …but with any type of military force...sometimes deterrence is going to fail. The reason it's going to fail is because even if we have the credibility; we have the capability; we've communicated to the enemy that we are going to use that credibility and capability—that military force—to really hit them hard; we still might not be able to deter a potential aggressor because he may have domestic concerns which make him, if you will, "undeterable."[130]

Coercion: Elements of Effective "Gradualism." The terms "incrementalism" and "gradualism" are often used to refer to coercive

escalation. Escalation can be approached incrementally or gradually. If approached gradually it is most often referred to as "gradual escalation" or "gradualism." Schelling described the idea as:

> The ideal compellent action would be one that, once initiated, causes minimal harm if compliance is forthcoming and great harm if compliance is not forthcoming, is consistent with the time schedule of feasible compliance, is beyond recall once initiated, and cannot be stopped by the party that started it but *automatically* stops upon compliance, with all this fully understood by the adversary. Only *he* can avert the consequences; he can do it only by complying; and compliance automatically precludes them.[131] (emphasis original)

"Incrementalism" is different in that it implies an amount of force administered over varied time intervals. Vietnam from an aerospace strategy perspective was an indictment of incrementalism, not gradualism. While the military would prefer neither approach, there are areas associated with success, as we have seen: threaten the adversary's strategy; magnify third-party threats; and escalation dominance. Gen. Ralston described four factors, fitting within these areas, that were different in Kosovo from Vietnam: a relatively developed industrial society offering substantial aerospace power targets (threaten strategy); some internal political opposition and negative world opinion (magnify third-party threats); and the Serbs were unable to inflict reciprocal punishment (escalation dominance).[132] Taken together with the broader areas of success identified by Byman, Waxman, and Larson, the following concepts are offered as elements of effective gradualism: no pauses; "what next" options; open options; and multiple dimensions. Consider a gradualism construct applied to Kosovo for discussion (see figure 6 and note):
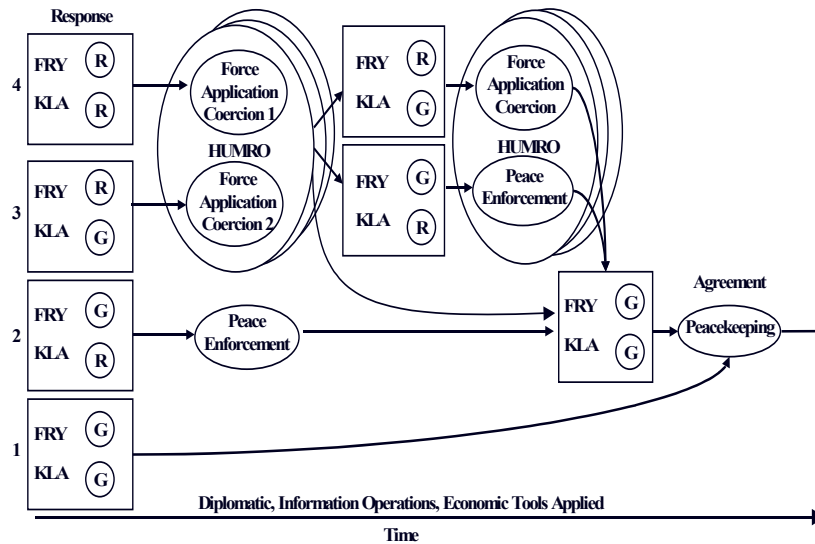
Figure 6. Notional Gradualism Strategy Framework Applied to Kosovo[133]

No Pauses. One of the key differences with respect to gradualism in Kosovo is that NATO did not pause.[134] When the decision to use force is reached, it should be applied in such a manner that allows application without ceasing until demands are met. Schelling's concept of gradualism had no room for pauses, but describes an action that inflicts steady pressure over time, accumulating pain or damage to the adversary.[135] Gen. Clark had concern with this during ALLIED FORCE. In one of the daily video teleconferences he said, "[NATO must strike] as many targets as we can each night. I don't want to let the perception get started that we're not doing much, so we can have a pause…. I don't want to get into something like the Rolling Thunder Campaign, pecking away indefinitely…. We've got to steadily ratchet up the pressure…. Otherwise we are at risk of being paused indefinitely. We'll lose public support."[136] Closely associated with not pausing is that coercion for the most part, takes time. Griffith cited that in Korea, "While air power contributed to the peace agreement, the air pressure strategy alone was not successful and its impact took much longer to be felt than the planners had originally anticipated."[137] In Kosovo, 78 days proved difficult to sustain for

NATO and, while there were calls for pause, it was an important factor in OAF's overall effectiveness.

   "What Next" Options. The strategist must always have a "what next" option that follows in a gradually increasing application of force along a "critical path" leading to the will of the adversary. The strategist must know the attributes of all US forces and capitalize on them to put the forces in the best possible position to provide a wide range of options for the political leadership.[138] In this regard, a gradualist strategy is similar to numerous branches and sequels in terms of an operational plan (see figure 6). Within a particular branch/sequel—within established restraints—one must maximize physical and psychological shock and paralysis and then be prepared to articulate what the next branch/sequel should be if the current one fails to achieve the desired results. This concept of "critical path" determination can be thought of as a "series of parallel" operations always directed at adversary centers of gravity. The notion is similar to Clausewitz's thoughts on a "chain of linked engagements" where each branch/sequel is viewed as part of a continuous series of events leading to the desired result.[139] Such an effort seeks large, disproportionate effects throughout the adversary's strategic depth and can only be determined through extensive analysis of the complex interaction of adversary systems.[140]

   Open Options. Widespread agreement came quickly during OAF that overtly ruling out ground forces was a mistake of potentially strategic consequences. No feasible means, military or otherwise, should be ruled out. Maximum achievable force should establish the importance in the adversary's mind that one has the capacity to achieve desired objectives whether one chooses to exercise all the capacity (aerospace, land, sea, etc.) or not. Pape determined "the most effective way to compel concessions without achieving decisive victory is to demonstrate that one actually has the capacity to achieve decisive victory…. Surrender long before complete military defeat should be regarded an outstanding coercive success."[141] Because of the possible nature of political restraint, achieving desired effects may require the use of other

elements of national power. Clausewitz said, "But there is another way [to gain victory]. It is possible to increase the likelihood of success without defeating the enemy's forces. I refer to operations that have *direct political repercussions*….   [T]hey can form a much shorter route to the goal than the destruction of the opposing armies."[142] (emphasis original)

     Multiple Dimensions. A multi-dimensional approach to gradualism assumes interdependence and a degree of self-compensation among an adversary's sources of strength.[143] A wide range of target sets is important in that multiple approaches (direct and indirect) serve to complicate the adversary's response—the observe, orient, and decide phases of his decision cycle. Multiple dimensions provide the advantage of allowing for miscalculations. In Liddell Hart's words, it is always having the adversary on the "horns of a dilemma." Meilinger notes that the US has enjoyed great advantage in this regard:

> …the American way of war is redundancy. It always has
> been…. We have the resources, therefore we are going to do
> all of the above and let the enemy try to worry about all
> these various things that are happening to him…. [W]hen
> you've got the best Air Force, the best Navy, the best Army,
> the best Marine Corps, the best space force, the best
> information force and you use them all at the same time, the
> enemy is absolutely overwhelmed to how he can deal with
> that.[144]

Fundamentally, a multi-dimensional approach requires the coherent use of all available means of power. Blechman and Kaplan concluded:

> The discrete use of the armed forces for political objectives
> should not be an option that decisionmakers turn to
> frequently or quickly to secure political objectives abroad; it
> should be used only in very special circumstances. We have
> found that over the longer term such uses of the armed
> forces were not often associated with positive outcomes.
> Decisionmakers should thus not expect them to serve as
> substitutes for broader and more fundamental policies
> tailored to the realities of politics abroad, and *incorporating
> diplomacy and the many other potential instruments
> available to U.S. foreign policy*.[145] (emphasis added)

Currently, the US is not organized to quickly formulate a comprehensive understanding of any potential adversary or to be able to identify a "critical path" of capabilities and vulnerabilities—both required for coercion. This is associated with the popular criticism that "we tend to end up fighting who we have not planned to fight." The emerging strategic environment requires the ability to rapidly "know the adversary."

Know the Adversary

Sun Tzu said "if you know others and know yourself, you will not be imperiled in a hundred battles; if you do not know others but know yourself, you win one and lose one; if you do not know others and do not know yourself, you will be imperiled in every single battle."[146] Colonel John Boyd, architect of the "observe, orient, decide, act (OODA) loop" decision-making cycle, in tracing the history of war, discovered that victory consistently went to the side that could think more creatively, orient itself, and then act quickly on the insight.[147] Rapid, comprehensive systems analysis is at the heart of observing the adversary and then orienting strategic decision-makers in the 21st century.

Understanding the nature of the conflict, the adversary, the full extent of its systems, and its critical capabilities and vulnerabilities comprises a huge problem that is becoming more difficult. Intense systems analysis can reveal key links and nodes (system interrelationships) that directly and/or indirectly relate to military capabilities. A deeper understanding of the adversary and its systems is the key to enabling creation of multiple options for national leaders—a foundational requirement for a strategy of coercion. Strategists will have to understand all feasible approaches to an adversary's strategic, operational and tactical centers of gravity. Luttwak described it this way, "The central problem is this: If we are going to make it with this kind of precision airpower in very low volume, akin to acupuncture, we really have to know where to put the needle. To make the other guy back down, you must understand his politics, his soul. You can't photograph his soul."[148] The US will have to exploit technology and computers in order to develop effects-

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based models, simulations, and wargames suitable to crises in the information age. Meilinger offered this assessment:

> I use to make a pitch that we could analyze tactical effects; we could not analyze operational or strategic level effects. I think we're getting to the point now where we can analyze operational and, to some extent, even strategic level effects. JWAC [Joint Warfare Analysis Center] is beginning to do that…and the way it's growing and becoming more mature and sophisticated is leading us down a very beneficial, desirable path because we are solving a major problem. Which is this measurement of strategic level effects…. [T]hat's what we're finally doing.[149]

Precision Engagement. One has to know who, what, when, and where to engage in order to achieve precision. Precision is becoming less of an issue for weapons. The US has the means to engage precisely—it can place a weapon any place it desires. After the "who" is decided, the core issues of precision engagement become determining what and where to engage from the strategic to the tactical level—to find, fix, track, and target. Joint and USAF understanding of precision engagement affects all aspects of organizing, training, and equipping forces: from expeditionary forces, to joint exercises, to focused logistics.

Leveraging Centers of Excellence. One also has to know—and must be able to measure—the possible effects of precision engagement. Rapid, comprehensive systems analysis requires fusion of numerous products. Access to centers of excellence, such as the Central Intelligence Agency (CIA), Defense Intelligence Agency (DIA), National Security Agency (NSA), National Imagery and Mapping Agency (NIMA), Joint Warfare Analysis Center (JWAC), Joint Information Operations Center (JIOC), and various service-specific organizations, is critical in this regard. Currently, their outputs are not examined collectively in a fashion suited to develop a comprehensive picture of the adversary. There is much to be gained from mutual support among the various centers that work on similar types of country studies and the like, but all from the organization's particular perspective. Through a process of determining what all the available outputs

Table 3. Activities Transferred to USACOM (now USJFCOM), 1998

Activity	Mission
Joint Warfare Analysis Center (JWAC)	Provide combatant commands and Joint Staff with effects-based, precision targeting options for selected networks and nodes to carry out US national security & military strategies during peace, crisis and war.
Joint Warfighting Center (JWC)	Assist the CJCS, combatant commands and military services in (1) preparing for joint and combined operations through conceptualization, development and assessment of current and future joint doctrine and (2) accomplishing joint and combined training exercises.
Joint Command and Control Warfare Center (now Joint Information Operations Center [JIOC])	Provide combatant commanders and Joint Staff expertise in planning and executing command and control warfare and information operations.
Joint C4ISR Battle Center	Provide combatant commands' joint task forces with a joint C4ISR assessment and experimentation capability.
Joint Communications Support Element	Provide contingency and crisis communications to meet operational support needs of combatant commands, services, defense agencies, and non-DOD agencies such as the State Department.

Source: General Accounting Office, *US Atlantic Command: Challenging Role in the Evolution of Joint Military Capabilities* (Washington, DC: Government Printing Office, 1999), 55.

are, how much redundancy exists, and how to coordinate the output, improved center access would aid the joint force commander (JFC) and his or her component commanders in strategy development. There is some movement in this direction with the transfer of some key planning organizations to US Joint Forces Command (USJFCOM) (see table 3).

Reachback is the process of obtaining necessary services or items from organizations, such as the above centers of excellence, which are not forward deployed.[150] The real-time and flexible targeting processes[151] created in OAF were cited as one example of positive reachback outcomes. Gen. Jumper said that their success was "dependent on a couple of things. The first and foremost thing was getting the processes and the right people and the right things and the right reachback all glued together."[152] In other words, most reachback entails accomplishing horizontal integration of already-available organizations and assets in order to get what Gen. Jumper calls, "decision quality data" to the commander.[153]

Modeling, Simulation, and Analysis. The kinds of modeling, analysis, and data collection required in the future must, the Toffler's wrote, be based on, "anticipatory thinking, rather than crash efforts after first blood is drawn."[154] They went on to say, "This requires insight not merely into military balances, troop movements, and the like, but information about the political factions and structural pressures, the payoffs and constraints that drive decision making in each state."[155] While complex, these kinds of modeling, simulation, and analysis are becoming available. The goal is not to remove the strategist from the loop and replace that person with computers, but to make the process such that the automated analytical analyses are maximized allowing the strategist to focus on the art of war. According to a 1995 RAND study, "The goal of automated support to planners should be exactly what the term itself implies—providing ready access to information and easier recording and implementation of decisions."[156] The acquisition of such rapid response strategy tools would be effective across the spectrum of conflict.

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The complexity of required analyses for systems warfare are immense. For example, Jason Barlow, author of *Strategic Paralysis: An Airpower Theory for the Present*, studied eight theories of strategic warfare and discovered seven areas of national elements of value: leadership, industry, armed forces, population, transportation, communication, and alliances.[157] The various interrelationships among the elements are dynamic and are accurate only at the time of a particular "snapshot."[158] What might have been a desired effect at the beginning of the conflict may not be important later therefore continual evaluation will be required throughout in order to determine which elements are critical at a given time.[159]

According to Lt. Col. John Borsi of the Air Force Studies and Analysis Agency, most operations research required for this type of systems analysis is not focused on supporting operations, but stovepiped along specific functional lines within an organization.[160] In order to do operations research well, one has to know all aspects of the operation and then exercise that analytic support in context.[161] Borsi also points out that it will be important to guard against using advances in analytic tools as predictive models.[162]

The current USAF operational level (campaign) model is THUNDER. The main advantage it enjoys from previous models is that it is not an attrition-based model reliant on ground forces.[163] THUNDER's primary shortfall is that it does not integrate the diverse elements of force application, C4ISR, mobility, and logistics.[164] The USAF's next generation campaign model, Synthetic Theater Operations Research Model (STORM), will integrate these elements.[165] STORM is also the USAF's contribution to the new Joint Warfare System (JWARS). In 1995, DOD established the Joint Analytic Model Improvement Program (JAMIP) to eliminate inadequacies in the current models of all the services; it designated JWARS as the joint warfare analysis model of the future.[166] JWARS is an aggressive attempt to model the contributions of all components to a theater campaign.[167] However, the current plans for JWARS are focused on resource allocation in support of the Planning, Programming, and Budgeting System (PPBS).[168] It remains to

be seen if STORM and JWARS can be used to analyze campaigns in crisis action or deliberate plans.[169]

Training. Inter-agency training will likely become an area for further refinement, as the US seeks to determine how extensively the various agencies will be required in the future. The final recommendations of The US Commission on National Security/21st Century for changes to the national security structure, due in January 2001, will likely affect the outcome. The commission's conclusion regarding the use of all instruments of power and the contributions of non-military national capabilities in the emerging security environment will likely have recommendations in the area of interagency operations.[170]

While the staff colleges and war colleges provide advanced education in strategy and operational art, there are few field exercises, particularly joint exercises, which emphasize operational level training for a commander and planning staff. The USAF's Joint Force Air Component (JFACC) training, known as BLUE FLAG, is accomplished as two interconnected exercises: crisis action planning (CAP) and execution. In addition to deployment actions during the CAP phase, strategy for the exercise conflict is formulated. Strategy has become an area of increased importance in the last few years. Historically, however, the strategy aspects have been downplayed. Speaking at the February 2000, Air Warfare Symposium, Gen. Jumper said, "We need to take those steps that consciously train our colonels and generals to command aerospace power at the operational level…."[171] He went on to add:

> Quite frankly, at BLUE FLAG, we had learned *about* the command and control of airpower. We learned to deal with very cantankerous pieces of technology like CTAPS [Contingency Theater Automated Planning System]. …[W]e spent more time trying to make them work than those systems work for us. To generate an ATO [air tasking order] with a thousand sorties was hard work, and we never got to the part where colonels and generals were required to mass and concentrate forces…or do the things that [Lt. Gen.] Mike Short [OAF Combined Forces Air Component

Commander] was required to do in real-time in his real combat experience.[172] (emphasis added)

RECOMMENDATIONS

To discover how much of our resources must be mobilized for war, we must first examine our own political aim and that of the enemy. We must gauge the strength and situation of the opposing state. We must gauge the character and abilities of its government and people and do the same in regard to our own. Finally, we must evaluate the political sympathies of other states and the effect the war may have on them. To assess these things in all their ramifications and diversity is plainly a colossal task. Rapid and correct appraisal of them clearly calls for the intuition of a genius; to master all this complex mass by sheer methodical examination is obviously impossible. Bonaparte was quite right when he said that Newton himself would quail before the algebraic problems it could pose.

—Clausewitz[173]

We can never predict who will be in the key positions of strategy formulation and execution in a time of crisis, and we cannot expect to be able to create "instant military strategists" in time war. In order to have the ability to expand, we need a structure—or better a matrix—in which at any one time there are officers at all levels experiencing a maturation of their talents as strategists. We need young strategists because we need senior strategists, and we need a lot because when the time comes we need enough.

 —General John R. Galvin, USA[174]

"Rapid and correct appraisal" in the 21st century will certainly call for "genius." While the means to methodically analyze the complex mass of information has improved from Clausewitz's day, the need is still for developing and maturing strategists who can master the complex art form of war. Aerospace forces will need commanders who can deal with the changing face and means of conflict and act decisively in support of national objectives. To that end, the recommendations put forth focus on improving aerospace power employment from a strategic and operational perspective not of maximizing operational effectiveness of individual platforms or systems.

Based on the findings of this study, recommendations will be made in three main areas: doctrine and strategy, tools for the strategist, and operational level training. At the foundation of all these recommendations is a multi-disciplinary, cross-functional aerospace power strategy team supporting the JFACC and the joint force commander.

The sentiment that the US maintains for wars of annihilation has less to do with political realities and more to do with actually re-thinking how to take aerospace forces of increasing precision and lethality and apply them in different ways. While systems warfare has been extensively discussed, it is important to remember that this approach is about methodology and the framework of a problem. Ultimately, warfare is not about systems, just as it is not about direct one-on-one annihilation; it is about finding new ways to affect the outcome of new problems by focusing on desired effects in the adversary.

Doctrine and Strategy

This study does not support changes to foundational warfighting precepts. Existing doctrine only needs to be adapted to accommodate the different strategy approaches that have been examined. No part of the preceding discussion should be taken to imply that basic joint or Air Force doctrine is flawed. For the USAF, it has generally enjoyed excellent basic (strategic) and tactical doctrines. The "how" of aerospace power, operational level doctrine, is the largest area in need of development. The Expeditionary Aerospace Force (EAF) culture change within the USAF has contributed to breaking down stovepipes that originated as result of tactical focus. Combat, combat support, and combat service support airmen now have improved understanding of how their roles contribute to the overall mission. It has often been said that, "flexibility is the key to air power," yet airmen have historically been rigidly focused on tactics and weapons load mixes as applicable to targeting processes. However, if flexibility for the airman is thought of not only as a tenet of aerospace power but as a principle of operations,[175] then the airman would develop a greater appreciation for its value in a strategy sense.
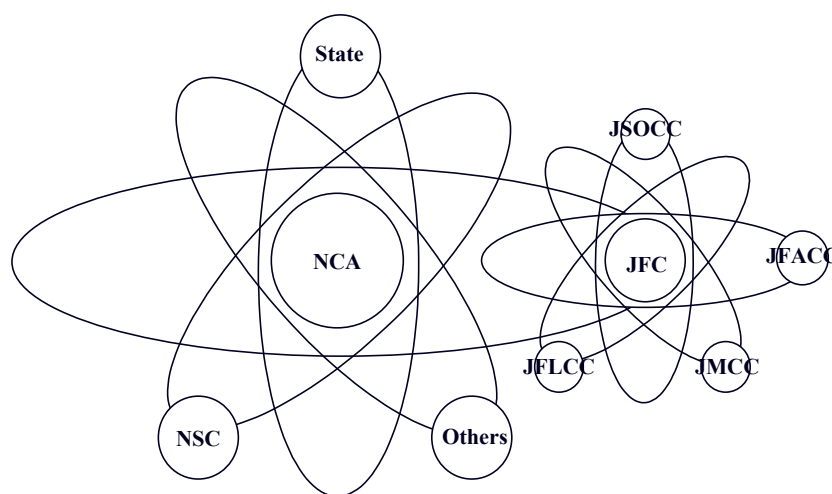
Figure 5. Joint Force Paradigm[176]

Generally, doctrinal changes should be pursued that emphasize that aerospace power or any branch of combat arms can function in a supported role. It is important to note that the JFC is not the center of the universe in this construct, but only a "planet" with the components "moons." (see figure 7) Regarding the land power-centric nature of existing doctrine, nowhere was it more acutely demonstrated than in the reversal of supported and supporting roles in ALLIED FORCE. Gen. Jumper commented:

> The biggest thing we need to overcome here is the doctrinal piece of the CINC saying the air component commander is the supported commander. …We never got the relationships squared away because we were afraid to do that. As a matter of fact, when the Apaches [Task Force Hawk] started becoming a factor, we went to this elaborate process of getting the corps commander in there so you could have somebody at the same level as the JFACC because somebody was afraid that the JFACC was going to ask for control of the Apaches.[177]

While the military promulgates doctrine reflecting the desired way of employment, the US has had doctrine it believed could be overwhelming, but was either restrained or constrained. In World War II, while restraints were few, constraints were most notable. Physical constraints precluded the strategic bombing doctrine's realization. While it is likely that available technology and conditions will always present some physical barriers that that will constrain the use of force, times have

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changed and the ratio between the two is now reversed. Specifically, development of "response" and "coercion" must be pursued in joint and USAF doctrine.

Filling the SSC Gap

Flexible "Response" Options. The types of contingency operations the US faces are for the most part not covered by deliberate or standing operational plans. Few of the locations have proved to have adequate infrastructure for typical US operations. The humanitarian dimension of recent conflicts has proved immense as well. Yet, no humanitarian operations (HUMRO) doctrine exists. While it will most likely continue to be important to separate combat from humanitarian missions in separate joint task forces (JTF), HUMROs cannot be separated from desired objectives and unity of effort.

With factors like these in mind and facing a potential crises in Kosovo, US Air Forces in Europe (USAFE) formed the 86th Contingency Response Group (CRG) prior to Operation ALLIED FORCE. It was designed to be "a multi-disciplinary, cross-functional team whose mission is to provide the first on-scene Air Force forces trained to command, assess, and prepare a base for expeditionary aerospace forces."[178] The 86th CRG provided: the foundation of a relief-delivery system; a framework for the initial deployment of USAF, joint, and multinational forces; airport and airspace control; initial US military leadership in the Emergency Management Group of participating country representatives and relief organizations.[179] With this in mind, a "flexible response option," as opposed to the current "flexible deterrent option" construct, would ask: What if the 86th CRG could have deployed to Albania, and possibly Macedonia, when the Rambouillet talks started to break down? Or earlier?

Coercion. While proven effective politically, coercion is inefficient and demanding from a military perspective. Nonetheless, this study has demonstrated that there are certain coercive elements that have proven to be areas of success: threaten strategy, magnify third-party threats, and escalation dominance. Further examination revealed that within these elements there

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were other factors (no pauses, "what next" options, open options, and multiple dimensions) that could be offered as elements of effective gradualism. All should be further developed in joint and USAF adoption into a form of "Smaller Scale Conflict."

A coercive strategy of gradualism is demanding and therefore particularly dependent on accurate assessment of effects taking place within the adversary. One must know what is desired, what is being achieved, and how the adversary is reacting in terms of systems changes in order to determine the true effectiveness of all operations—lethal and non-lethal. Traditional means of bomb damage assessment (BDA) typically prove insufficient, being optimized for looking for physical damage. Achieving an effect within a system requires a holistic assessment of system operations and functions as much or more than destructive assessment of things. This is the area where equipping the strategist with the right tools becomes important.

Tools for the Strategist

There will be a diverse nature of threats in the information age. Increasing urbanization will complicate intelligence gathering. Humanitarian operations have a greater likelihood of being intermingled with combat operations in such environments—possibly being more complicated than the combat operations themselves. Proliferation of potential adversaries coupled with the fact that the US always seems to fight who and where it had not planned create lofty problems for the theater commanders-in-chief (CINC) and his planners. The goal of USJFCOM's "Precision Engagement Process" is to provide a supported CINC with "focused, collaborative, operational, intelligence, and interagency support" for effects-based operations and targeting to better deal with such challenges.[180] The emphasis is on meeting the CINCs' limited resources to conduct infrastructure modeling and analysis, develop integrated courses of action, determine the best effect, and rapid effects assessment.[181] This effort is supportive of operations across the spectrum of conflict and consistent with the following recommendations.

Joint Reachback. Timely, accurate, strategically and operationally focused intelligence is the most critical element to success of any operation. Military planners must be aware of, use, and train with the organizations that together have the capability to develop a comprehensive picture of an adversary. Analyzing an adversary as a system yields critical nodes vital to its warfighting capability that can reveal the best approaches to centers of gravity.[182] USJFCOM expects to develop the foundation for "one stop shopping" support for the CINCs both before and during operations.[183]
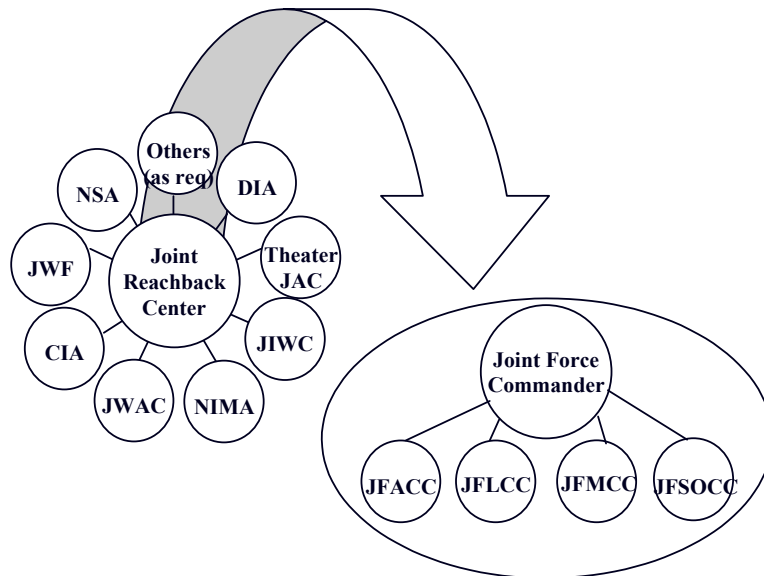

Figure 6. Joint Reachback Concept

Pape recommended that "governments should create permanent organizations composed of individuals with expertise in a variety of military and civilian fields and disciplines to study the various political effects that alternative uses of force might produce…. [S]uch groups should serve as repositories of knowledge about the general political, economic, and social effects of various applications of force, which would be available to policy makers considering intervention in international disputes."[184] In such a federated center of excellence construct, the organizations would exploit the gains in artificial intelligence to perform extensive objective analyses. Closely

associated and supporting these centers are advanced modeling, simulation, and analysis means.

      "Operationalize" Modeling, Simulation, and Analysis. Campaign analysis in the future must be responsive to diverse adversaries and dynamic restraints to be capable of examining "maximum achievable force" for any scenario. These future campaign analysis tools should also be able to account for the contributions of non-military power and non-lethal effects of combat. A 1999 General Accounting Office (GAO) report concluded that USACOM (now USJFCOM), by having the Joint Warfighting Center work with the Joint Training and Simulation Center, is improving the joint training program, development of joint doctrine, and is expected to enhance DOD modeling and simulation.[185] The plan is for USJFCOM to serve as a single source for joint training and warfighting support, with strong roles in lessons learned, modeling and simulation, doctrine, and joint force experimentation.[186]

      To this end, the USAF should fully support the Joint Analytic Model Improvement Program (JAMIP) efforts to eliminate inadequacies in all the current models. The service should fully support development of the new Joint Warfare System (JWARS) campaign model and its goal to capture the contributions of all components to a theater campaign. Continued USAF support to its next generation campaign model, the Synthetic Theater Operations Research Model (STORM), is pivotal in this overall effort since it is the first to integrate diverse elements of force application, C4ISR, mobility, and logistics. Joint and USAF plans should center on the ability of these new models to support crisis action or deliberate planning first and resource allocation in support of the Defense Department Planning, Programming, and Budgeting System second.

Strategic and Operational Training

General Anthony C. Zinni, Commander-in-Chief, US Central Command, speaking at the February 2000 Air Warfare Symposium said, "We don't do a good job of training people for this job I hold right now,…to understand the broader, maybe more difficult, things in how to plan and conduct an air

campaign and then how to make the air campaign fit into everything else you are doing, be it naval, air, ground [or] combinations thereof, [and] the political side of that dimension."[187] In other words, the US must train operational commanders and their planners to be effective in the emerging strategic environment.

Integrating the Interagency Process. Those same commanders and staffs must then exercise strategic and operational elements in crisis scenarios, including the interagency process, including participation with key civilian leadership such as the National Security Council. The types of training described in PDD-56 must be pursued below senior leadership levels. Additionally, education development about the interagency process is required beyond the National Defense University and the Army War College.

The primary reason is that even with an excellent understanding of the adversary, the military may not be able to affect anything the adversary values or get at its COG with aerospace power or anything else. Nonstate actors are an important case in point. Byman, Waxman, and Larson concluded that, "Such actors provide few easy targets to destroy or hold at risk; they can flexibly adapt to or counter military strikes. Working with local opposing parties (state or nonstate) will often be necessary and require a more sophisticated understanding of local dynamics and an adversary's internal workings than may be available…. Success in these case will often require a convergence of factors, many of them far beyond the control of air planners."[188] General Clark also advised that greater coordination should be made between the military and the diplomatic fronts and that other kinds of coercion—economic, for example—should be counted among the tools available to achieve the desired objectives.[189] It simply is going to take aspects of everything the US can bring to bear to resolve conflicts in the future.

Operational Level Training Enhancements. While most of this study has focused on understanding the adversary, to be fully effective the US military must understand itself. This requires purposeful training at all levels

of war. Training must be joint and composite, but in many ways, no longer requires collocation or massing of actual forces. For operational commanders and key staff, new and emerging distributed and collaborative training tools offer abilities to extensively plan, wargame, and simulate employment from varied locations around the world.

Jointly and by individual service, the US must better train its leaders, especially at middle and senior levels, to work at the operational and strategic levels of warfare. This is especially pertinent to the USAF where a critical need is to incorporate rapid response aerospace strategists into its expeditionary culture. Lieutenant General Michael Short, OAF Combined Forces Air Component Commander, recently discussed his recommendations for the future of operational level training. Speaking at the February 2000, Air Warfare Symposium, he said, "I went to one BLUE FLAG in my life…and the emphasis was on getting the ATO [air tasking order] out."[190] He went on to say:

> I came away from that experience [first J-7 in US Atlantic Command] with a healthy respect for a program the US Army runs called the Battle Command Training Program, BCTP. It is a series of yearly exercise based on modeling and simulation…. You start out with platoon leaders, and you train as platoon leaders, and company commanders, and battalion XOs [executive officers], and commanders, and division and corps commanders. …[G]enerations of great soldiers in green uniforms have learned how to practice their trade in a BCTP matrix. I believe there is something out there that offers the Air Force that same opportunity. I believe it is BLUE FLAG-based, and…it is not about the ATO, it is about a thought process. …—how to employ and execute airpower. Initially, certainly at the tactical level, but moving to the operational and strategic level. I believe that is *something we need to do or…we run the risk of continuing to be incredible operators at the tactical level, but not the leaders at the operational or strategic level, where our nation needs us*.[191] (emphasis added)

CONCLUSION

Above all, warfare, especially limited warfare, is an art. As such, it requires intellectual sophistication, mental dexterity, and the ability to think abstractly… If the Air Force is to

perform successfully within the context of national
objectives, its leaders must become masters of the art of war.

—Dr. Earl H. Tilford[192]

We now need airmen conversant and well grounded in all
aspects of warfare, including the theoretical. Only then will
they be able to select the employment concept best suited to
the situation at hand. Flexibility is also the key to air
strategy. Ultimately, air-targeting strategy is an art, not a
science. Unfortunately, it is an incredibly complex art.

—Colonel Phillip S. Meilinger[193]

The strategy imperative for the airman has always been present. It has been masked by a land power-centric approach to war—the overwhelming firepower approach of World War II—that has prevailed through the industrial age, as well as the airman's own inattention. DESERT STORM changed the airman's outlook and supplied confidence in his abilities and capabilities. The stage is set for a new breed of aerospace leaders who think about aerospace power differently. For the most part, US aerospace power is on the right course, but as ALLIED FORCE showed, the airman's preferred ideas are brought back to reality by politics.

The emerging strategic environment will become increasingly complex. If the US responds militarily it will be limited. Restraints will be imposed—largely as a function of the conflict's relation to national interests. Aerospace power will be the instrument of choice in most of these conflicts. Therefore, the USAF must be able to execute decisive operations across the spectrum of conflict—it has to be able to fight all kinds of wars well. Emerging aerospace power capabilities will overcome many current and foreseen constraints with respect to finding, fixing, tracking, and targeting diverse aspects of potential adversaries, providing the means to contribute to decisive operations anywhere along that spectrum.

This is a strategy imperative in the face of rapidly changing technology, tactics, and restraints. Though the means will change, warfare will remain an art form, not a science. Therefore, strategy provides the

linchpin of success in the future environment, not technology. These changes place a premium on strategy and operational art for the airman. The same level and intensity with which the Air Force pursues tactical expertise must be pursued at the operational level. This means the airman has got to be able to know what kind of war it is the US has to fight, whether or not the US can fight it, or whether the conflict at hand requires resolution by other means. ALLIED FORCE shows that the US military has not thought through all "how's," especially when a component other than the land force functions as the supported commander. The "how to" of "responding" and "coercing" are the areas that most notably stand out from the aerospace power only operations in Kosovo that must be addressed.

The immediate joint and USAF needs are for improvements to operational doctrine, training, and tools. The US military cannot focus exclusively on the war it would prefer to fight and ignore the complex realities of places like the Balkans or the ramifications of changes brought about by the revolution in military affairs. While recommendations deal in areas traditionally uncomfortable for the airman and the military it is nonetheless required. This study has tried to focus on areas that will benefit operations across the spectrum:

> Thinking about ways to improve national power integration is applicable in any conflict.
> Thinking about solving a conflict before the shooting starts by responding with capabilities that strengthen allies and friendly states and can easily transition efforts if the shooting starts.
> To be able to rapidly formulate a comprehensive systems blueprint of an adversary is a force multiplier.
> The key to success in coercion or any strategy is the ability to undermine the adversary's strategy.

But limited conflict and limited force are sticking points that will have to be overcome. They can be overcome without compromising all-out war capability.

This study also provides an imperative for civilian leadership. The US can only reduce military force so much and then it must ask itself why it is

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considering resorting to force and what else is available? The history of employing measures short of war points out that they take time to be effective. Yet the length of time involved is always a concern when the US resorts to force. There is a balance to be achieved between the desires of civilian leadership and what the military can reasonably be expected to deliver. The balance is most likely to be achieved in an environment of trust, cooperation, and coordination: The ability to balance restraints with the increasing capabilities of aerospace power.

NOTES

[1] Dennis M. Drew and Donald M. Snow, *Eagle's Talons: The American Experience at War* (Maxwell AFB, AL: Air University Press, December 1988), 1.

[2] Thomas C. Schelling, *Arms and Influence* (New Haven, CT: Yale University Press, 1966), 34.

[3] A note on the use of terms. Air Force Doctrine Document 1-2, *Air Force Glossary*, 9 July 1999, defines *aerospace power* as "the synergistic application of air, space and information systems to project global strategic military power." *Aerospace power*, as it is used in this paper, describes the use of aircraft, spacecraft, and information in the air and/or space medium to project military power in order to create political and military effects. *Air power* and *space power* are subsets of aerospace power. *Aerospace power* will be used throughout the text unless citing a work that uses another similar term (e.g., a*ir power, airpower, air and space power)* or if the term, *air power,* is required in the context of reflecting the time before space flight. The same general meaning is implied regardless.

[4] While aspects of this paper are applicable to aerospace power in general, it is written from a US, first, and, then, a USAF perspective.

[5] *Airman* will be used to describe any military or military-related practitioner of aerospace power employment.

[6] Anthony H. Cordesman, "The Lessons and Non-Lessons of the Air and Missile War in Kosovo," revised draft report (Washington, DC: Center for Strategic and International Studies, 22 September 1999), 16; on-line, Internet, October 1999, available from http://www.csis.org.html.

[7] President William J. Clinton, *National Security Strategy for a New Century* (Washington, DC: The White House, December 1999), 1.

[8] Ibid., 1-2.

[9] Ibid., 2.

[10] Ibid.

[11] Quoted in Barton Gellman, "The Kosovo Peace Deal; What It Means," *The Washington Post*, 6 June 1999, A1.

[12] General John P. Jumper, Commander, US Air Forces in Europe, interviewed by author during visit to Ramstein AB, FRG, 13 October 1999.

[13] Drew and Snow, 324-325.

[14] John A. Warden, "The Enemy as a System," *Airpower Journal* 9 (Spring 1995), 55.

[15] Drew and Snow, 396.

[16] Ibid.

[17] Jumper interview.

[18] Joint Pub 3-0, *Doctrine for Joint Operations*, 1 February 1995, V-5.

[19] *Webster's Desk Dictionary of the English Language*, based on *The Random House Dictionary* (Avenel, NJ: Gramercy Books, 1983), 196.

[20] *Webster's New World Dictionary*, 2nd college ed. (World Publishing Company, 1978), 1212.

[21] The terms constraint and restraint and their associated concepts, should not be confused with a discussion of military orders—orders from political leadership to senior commanders, from commanders to forces in the field, or otherwise. It is assumed here that constraints and restraints will be reflected accordingly in military orders that follow.

[22] Joint Doctrine Air Campaign Course, *Air Campaign Planning Handbook* (Maxwell AFB, AL: College of Aerospace Doctrine, Research, and Education, January 1997), 16.

[23] Colonel Kevin J. Kennedy, Division Chief, HQ USAF/XOOC, Checkmate, used similar terminology. Notes, HQ USAF/XOOC, Checkmate Strategy Conference (U), conducted at Arlington, VA, 8 February 2000. (Secret) Information extracted is unclassified.

[24] Joint Pub 3-0, xv.

[25] Ibid., V-3.

[26] JDACC, 16.

[27] Mark Clodfelter, *The Limits of Air Power: The American Bombing of North Vietnam* (New York, NY: The Free Press, 1989), 4.

[28] Kennedy used similar terminology. Notes, HQ USAF/XOOC, Strategy Conference (U). (Secret) Information extracted is unclassified.

[29] Herman Kahn, *On Escalation* (New York, NY: Frederick A. Praeger, 1965), 3.

[30] Ibid., 4.

[31] Robert C. Owen, ed., *Deliberate Force: A Case Study in Effective Air Campaigning* (Maxwell AFB, AL: Air University Press, January 2000), 242.

[32] Figure adapted from Kahn, 5.

[33] JDACC, 16.

[34] Drew and Snow, 377.

[35] Cited in John A. Tirpak, "The NATO Way of War," *Air Force Magazine*, December 1999, 25.

[36] Quoted in "The NATO Way of War," 24.

[37] While no other nation can exploit inclement weather operations like the US, there are still limitations, most of which involve precision-guided munitions. The problem is being ameliorated with the continuing introduction of next-generation GPS-aided munitions (e.g., JDAM, JSOW, and JASSM). Weather problems in Kosovo were more a function of the precision required to meet collateral damage restraints than the actual capability to deliver weapons. For the USAF, all USAF combat aircraft can deliver various payload types in adverse weather.

Positive target identification in a highly dynamic environment is a constraint that will require priority effort to overcome.

Precision munitions proved dominate in ALLIED FORCE, but there were munitions expenditure implications that the US and Allies did not foresee. The high demand for PGMs required prudent management in order to ensure war reserve stocks remained at acceptable levels.

[38] Alvin Toffler and Heide Toffler, *War and Anti-War* (New York, NY: Warner Books, 1993), 104.

[39] Drew and Snow, 372-373.

[40] US Commission on National Security/21st Century, *New World Coming: American Security in the 21st Century*, Phase I Report (Washington, DC, 15 September 1999), 8.

[41] Ibid., 7.

[42] Earl H. Tilford, *The Halt Phase Strategy: New Wine in Old Skins…With PowerPoint*, (Carlisle Barracks, PA: Strategic Studies Institute), 24.

[43] Justin Brown, "World Choke Points' Are Moving From Sea to Air," *Christian Science Monitor*, 15 December 1999, 3.

[44] Notes, US Army Conference on Strategic Responsiveness, Washington, DC, 2 November 1999.

[45] Toffler, 270-271.

[46] Robert A. Pape, *Bombing to Win: Air Power and Coercion in War* (Ithaca, NY: Cornell University Press, 1996), 2.

[47] Drew and Snow, 384.

[48] Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1976), 88.

[49] Colonel Phillip S. Meilinger, USAF, interviewed by author during visit to US Naval War College, Newport, RI, 3 December 1999.

[50] Clausewitz, 585.

[51] Notes, Lord George Robertson, NATO Secretary General, "NATO: Why Should Americans Care?" address at The George Washington University, Washington, DC, 4 April 2000.

[52] Paul Mann, "Kosovo's Lessons Called Ambiguous," *Aviation Week and Space Technology*, 28 Jun 1999, 32.

[53] Clausewitz, 77.

[54] Michael I. Handel, *Masters of War: Sun Tzu, Clausewitz, and Jomini* (London: Frank Cass, 1992), 32-33.

[55] Ibid., 87-88.

[56] Karl Mueller, "Dues Ex Machina? Coercive Air Power in Bosnia and Kosovo" (paper presented at the University of Chicago Program on International Security Policy, Chicago, IL, 16 November 1999), 20.

[57] Jumper interview.

[58] Standoff attack is that capability that exceeds the free fall ballistic range of a munition. Typically this is on the order of 15 nautical miles or greater.

[59] Keith Hutcheson, *Air Mobility: The Evolution of Global Reach* (Vienna, VA: PointOneVII, September 1999), 28.

[60] General Michael E. Ryan, Chief of Staff, USAF, address to the Air Force Association Air Warfare Symposium, Orlando, FL, 24 February 2000.

[61] Ibid.

[62] Ibid.

[63] Christopher J. Bowie et. al., *The New Calculus: Analyzing Airpower's Changing Role in Joint Theater Campaigns* (Santa Monica, CA: RAND, 1993), 83-84.

[64] Mueller, 20.

[65] Ibid.

[66] General Joseph W. Ralston, USAF, Vice Chairman of the Joint Chiefs of Staff, address to the Air Force Association National Convention and Symposium, Washington, DC, 16 September 1999.

[67] Schelling, 3.

[68] This definition is essentially a combination of basic definitions used by Daniel Ellsberg and Byman, Waxman, and Larson. See Daniel Ellsburg, *The Theory and Practice of Blackmail* (Santa Monica, CA: RAND, July 1968), 2; and Daniel L. Byman, Matthew C. Waxman, and Eric Larson, *Air Power as a Coercive Instrument* (Santa Monica, CA: RAND, 1999), 10.

[69] For Schelling, coercion included two dimensions: deterrence and compellence. "The threat that compels rather than deters often requires that punishment be administered until the other acts, rather than if he acts." (Schelling, 70; emphasis original) "Deterrence involves setting the stage—by announcement, by rigging the trip-wire, by incurring the obligation—and waiting. The overt act is up to the opponent." (Ibid., 71; emphasis original) "Compellence, in contrast, usually involves initiating an action (or an irrevocable commitment to action) that can cease, or become harmless, only if the opponent responds." (Ibid., 72)

[70] Ibid., 3-4.

[71] Ibid., 16.

[72] Dana Priest, "France Balked at NATO Targets," *The Washington Post*, 20 September 1999, A10.

[73] Drew and Snow, 323.

[74] Ibid., 297.

[75] Ibid.

[76] Adapted from: Briefing, HQ USAF/XOOC, subject: Introduction to Checkmate, 6 January 1999.

[77] Schelling, 30.

[78] Statement of General Wesley K. Clark, USA, SACEUR, in Senate, *Lessons Learned from Military Operations and Relief Efforts in Kosovo: Hearing before the Committee on Armed Services,* 106th Cong., 1st sess., 21 October 1999, n.p.; on-line, Internet, 4 November 1999, available from http://www.senate.gov/~armed_services/hearings/1999/c991021.htm.

[79] Senator Joseph I. Lieberman, "Transforming National Defense for the 21st Century," address to the US Army Conference on Strategic Responsiveness, Washington, DC, 2 November 1999.

[80] Drew and Snow, 379.

[81] Shock and paralysis are normally associated with the use of overwhelming force, especially from aerospace power.

[82] Both terms describe the idea that operations are most effective when they create effects that help achieve different levels of objectives at the same time. Generally, aerospace power can attack strategic, operational, and tactical targets at the same time. See Frederick L. Baier, "50 Questions Every Airman Can Answer" (Maxwell AFB, AL: Air Force Doctrine Center, undated), 7.

[83] An adversary can be viewed as a total system composed of numerous subsystems. The Warden model describes five basic sub-systems: leadership, organic essential, infrastructure, population, and fight mechanism. See Warden, 44.

If systems are attacked piecemeal or gradually, the potential for work-arounds greatly increases.

[84] Adversary systems require extensive analysis in order to determine what needs to be attacked and what effect is desired in the attack. The attacks must then be assessed in order to determine if the effect was achieved. Extensive system adaptation leads to increased analysis and assessment requirements.

[85] Byman, Waxman, and Larson, 129.

[86] Dana Priest, "Tension Grew With Divide Over Strategy," *The Washington Post*, 21 September 1999, A16.

[87] Byman, Waxman, and Larson, 30.

[88] Ibid., 37-38.

[89] Dana Priest, "A Decisive Battle That Never Was," *The Washington Post*, 19 September 1999, A30.

[90] Comments on Dr. Robert A. Pape in Tilford, 37.

[91] Pape, 8.

[92] Byman, Waxman, and Larson, 39.

[93] Ibid.

[94] Richard C. Holbrooke, *To End a War* (New York, NY: Random House, 1999), 144.

[95] Byman, Waxman, and Larson, 40.

[96] Pape, 24.

[97] Byman, Waxman, and Larson, 31.

[98] Quoted in Priest, "Tension Grew," A16.

[99] Phillip S. Meilinger, "Gradual Escalation," *Armed Forces Journal International*, October 1999, 18.

[100] Thomas E. Griffith, "Air Pressure: Strategy for the New World Order?" *Airpower Journal* 8, no. 2 (Summer 1994): 23.

[101] General Henry H. Shelton, USA, Chairman of the Joint Chiefs of Staff, "Force, Diplomacy and National Security," address to the Patterson School of Diplomacy and International Commerce, University of Kentucky, 19 November 1999.

[102] United Kingdom Ministry of Defence, *Kosovo: An Account of the Crisis, Initial Lessons Learned* (London: Ministry of Defence, Undated), 3; on-line, Internet, 13 October 1999, available from http://www.mod.uk/news/kosovo/account/lessons.htm.

[103] Byman, Waxman, and Larson, 21.

[104] Clark, US Senate.

[105] See Toffler, Chapter 9 for an excellent discussion of "Third Wave" information age changes and how they will the organization and instruments of war.

[106] Warden, 51-52.

[107] Department of Defense, *Kosovo/Operation ALLIED FORCE After-Action Report*, report to Congress (Washington, DC: Department of Defense, 31 January 2000), A-9.

[108] Pape, 329-330.

[109] Barry M. Blechman and Stephen S. Kaplan, *Force Without War: U.S. Armed Forces as a Political Instrument* (Washington, DC: Brookings, 1978), 4.

[110] Pape, 329-330.

[111] Quoted in Charles M. Westenhoff, *Military Air Power: The CADRE Digest of Air Power Opinions and Thoughts* (Maxwell AFB, AL: Air University Press, October 1990), 56.

[112] Mueller, 16.

[113] Cordesman, 7.

[114] Quoted in "DOD News Briefing," *DefenseLINK News*, 24 March 1999; on-line, Internet, October 1999, available from http://www.defenselink.mil/news/mar1999/t03241999_t0324sd. html.

[115] Lieberman.

[116] Ibid.

[117] Air Chief Marshal Sir Richard Johns, Royal Air Force, Chief of the Air Staff, Sir Frederick Tymms Memorial Lecture to the Guild of Air Pilots and Air Navigators, The Royal Aeronautical Society, 21 September 1999, 6; on-line, Internet, 4 November 1999, available from http://www.raf.mod.uk/news/castymms.html.

[118] Quoted in Holbrooke, 145.

[119] Ibid.

[120] Presidential Decision Directive 56. "The Clinton Administration's Policy on Managing Complex Contingency Operations," White Paper, May 1997, 1; on-line, Internet, 11 February 2000, available from http://whitehouse.gov/WH/EOP/NSC/html/documents/NSCDoc2.html.

[121] Ibid.

[122] Department of Defense, 126.

[123] Ibid.

[124] PDD-56, 5.

[125] Department of Defense, 5.

[126] Cordesman, 15.

[127] Department of Defense, 7.

[128] Edward B. Atkeson, "The Death of Strategy?" *Army Magazine*, June 1999, 14.

[129] Meilinger interview.

[130] Ibid.

[131] Schelling, 89.

[132] Ralston.

[133] Note that the coercive strategy flow considers two adversaries (the FRY and the KLA) and each one's possible starting scenario position with respect to the US/NATO/UN desired end state when NATO decides to respond. Position one represents that a political agreement is reached without resort to force. This reflects the desired Rambouillet outcome. Position two reflects the notion of continued KLA intransigence. NATO could impose a settlement and conduct peace enforcement operations. Position three is essentially the scenario when Operation ALLIED FORCE began on 24 March 1999. Position four is similar, but reflects a non-cooperative KLA as in position two. In positions three or four, two basic force application strategies reflect the differences in the adversaries. However, there are numerous possible strategies that could consist of various branches and sequels. These coercive force measures also require simultaneous humanitarian operations due to refugee flows. At some point a change in the FRY or KLA position occurs requiring a change in the phase of operations. The bottom of the figure shows the other elements of national power applied in concert with the military instrument.

[134] Lt Col Patrick L. Sheets, USAFE Studies and Analysis (Air War Over Serbia group), interviewed by author during visit to Ramstein AB, FRG, 14 October 1999.

[135] Schelling, 90.

[136] Quoted in Priest, "Tension Grew," A16.

[137] Griffith, 25.

[138] James Riggins and David E. Snodgrass, "Halt Phase Plus Strategic Preclusion: Joint Solution for a Joint Problem," *Parameters*, Autumn 1999, 11-12.

[139] Clausewitz, 182.

[140] Riggins and Snodgrass, 9.

[141] Pape, 5.

[142] Clausewitz, 92-93.

[143] Jason B. Barlow, *Strategic Paralysis: An Airpower Theory for the Present* (Maxwell AFB, AL: Air University Press, February 1994), 62.

[144] Meilinger interview.

[145] Blechman and Kaplan, 532.

[146] Sun Tzu, *The Art of War*, trans. Thomas Cleary (Boston, MA: Shambhala Publications, 1988), 82.

[147] Phillip S. Meilinger, "Air Strategy: Targeting for Effect," *Aerospace Power Journal* 13, no. 4 (Winter 1999): 54.

[148] Edward N. Luttwak, "Operation ALLIED FORCE: Strategy, Execution, Implications," address, Eaker Colloquy on Aerospace Strategy, Requirements, and Forces, Washington, DC, 16 August 1999, 6. On-line. Internet, 2 September 1999. Available from http://www. aef.org/eak16aug99.html.

[149] Meilinger interview.

[150] AFDD 1-2.

[151] Real-time targeting refers to the process of identifying and attacking a target with immediately available assets. The sensor-to-shooter cycle is accomplished in near real time. Flexible targeting refers to the process of using a mixture of weapons and/or assets to prosecute a variety of emerging targets. The two tactics can be related. Flexible targeting can be done in real-time if the assets are immediately available. It can also be accomplished from a ground alert response.

[152] Jumper interview.

[153] General John P. Jumper, USAF, Commander, Air Combat Command, "21st Century Aerospace Force: Essentials for Operational Success," address to DFI International Aerospace Power Seminar Series, Rayburn House Office Building, Washington, DC, 13 April 2000.

[154] Toffler, 281.

[155] Ibid.

[156] David A. Shlapak and David E. Thaler, *Perspectives on Theater Air Campaign Planning* (Santa Monica, CA: RAND, 1995), 31.

[157] Barlow, 57.

[158] Ibid., 66.

[159] Ibid.

[160] Lt Col John Borsi, USAF, interviewed by author during visit to Air Force Studies and Analysis Agency, Rosslyn, VA, 24 February 2000.

[161] Ibid.

[162] Ibid.

[163] Lt Col Daniel Hackman, USAF, interviewed by author during visit to Air Force Studies and Analysis Agency, Rosslyn, VA, 24 February 2000.

[164] Ibid.

[165] Ibid.

[166] Ibid.

[167] Ibid.

[168] Ibid.

[169] Ibid.

[170] Commission on National Security, 7.

[171] General John P. Jumper, USAF, Commander, Air Combat Command, address to the Air Force Association Air Warfare Symposium, Orlando, FL, 25 February 2000.

[172] Ibid.

[173] Clausewitz, 585-586.

[174] General John R. Galvin, "What's the Matter with Being a Strategist?" *Parameters* 19, no. 1 (March 1989): 4.

[175] For an excellent discussion of flexibility as a principle of military operations, see Robert S. Frost, *The Growing Imperative to Adopt 'Flexibility' as an American Principle of War* (Carlisle, PA: Strategic Studies Institute, US Army War College), 15 October 99.

[176] Adapted from Figure 6. David A. Deptula, *Firing for Effect: Change in the Nature of Warfare* (Arlington, VA: Aerospace Education Foundation, 24 August 1995), 16.

[177] Jumper interview.

[178] General John P. Jumper, "Rapidly Deploying Aerospace Power," *Aerospace Power Journal* 13, no. 4 (Winter 1999): 4-5.

[179] Ibid., 8-9.

[180] Briefing, US Joint Forces Command, subject: Provide a Validated Precision Engagement Concept of Operations, undated (copy provided by the Joint Warfare Analysis Center on 25 February 2000).

[181] Ibid.

[182] Riggins and Snodgrass, 10.

[183] General Accounting Office, *U.S. Atlantic Command: Challenging Role in the Evolution of Joint Military Capabilities*, GAO/NSIAD-99-39 (Washington, DC: General Accounting Office, February 1999), 56.

[184] Pape, 330.

[185] GAO, 55.

[186] Ibid., 56.

[187] General Anthony C. Zinni, USMC, Commander-in-Chief, US Central Command, address to the Air Force Association Air Warfare Symposium, Orlando, FL, 25 February 2000.

[188] Byman, Waxman, and Larson, 125-126.

[189] Clark, US Senate.

[190] Lt. Gen. Michael C. Short, USAF, Commander, Allied Air Forces, Southern Europe, address to the Air Force Association Air Warfare Symposium, Orlando, FL, 25 February 2000.

[191] Ibid.

[192] Earl H. Tilford, "Setup: Why and How the US Air Force Lost in Vietnam," *Armed Forces & Society* 17, no 3 (1991): 339.

[193] Meilinger, "Air Strategy," 60.